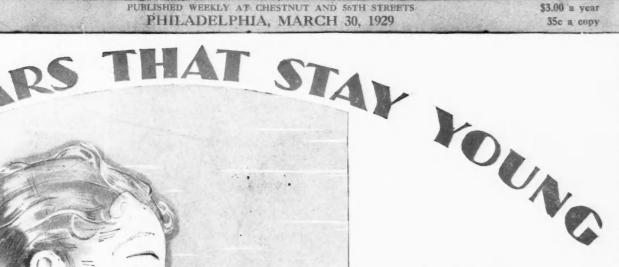
# AUTOMOTIVE INDUSTRIES

Volume 60 Number 13

PHILADELPHIA, MARCH 30, 1929

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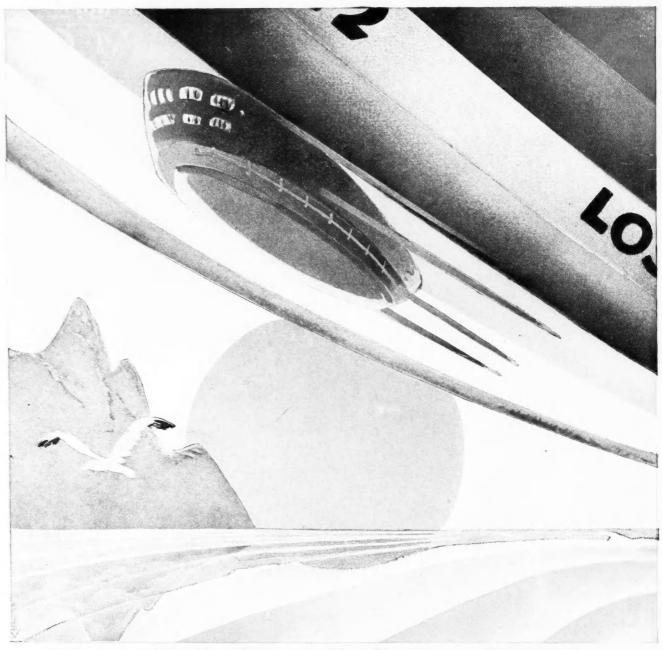
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Vol. 60

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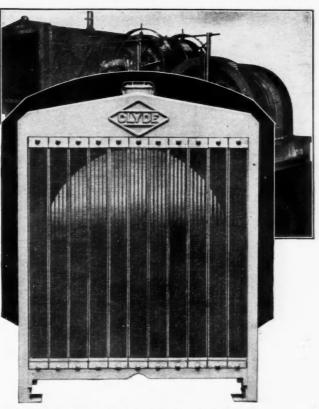
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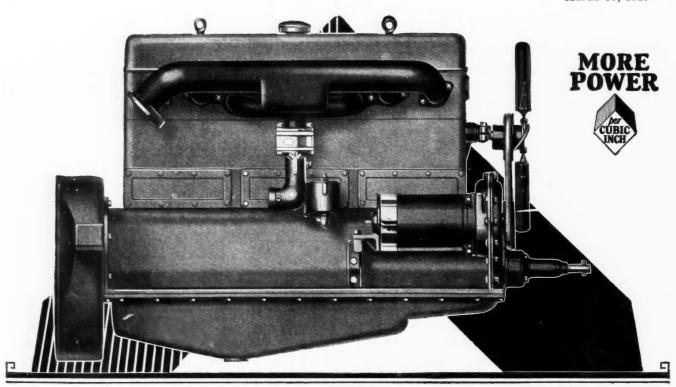
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## AUTOMOTIVE INDUSTRIES

VOLUME 60

Philadelphia, Saturday, March 30, 1929

NUMBER 13

# Industry's Outlook Satisfactory As First Quarter Sets Records

Tightening money is only cloud in business sky as automotive industry enters the second lap of 1929 economic race.

Foreign markets steadily grow in importance.

By Norman G. Shidle



FF to new records!

The automotive industry sweeps into the second quarter of 1929 leaving behind it a bewildering array of new economic records, startling, staggering even in an industry long since used to reaching new peaks of sales and production with seemingly impossible regularity.

With final March figures still unavailable, indications are that passenger car production for the first quarter of 1929 has exceeded that of the same period in 1928 by something near 40 per cent, and that truck output has shown an almost unbelievable gain of between 65 and 70 per cent. Detailed domestic and foreign sales figures are not yet available, of course, except for the month of January, but these early returns, together with special reports to Automotive Industries from correspondents in all parts of the world, show that retail deliveries unquestionably have gone ahead at a similarly accelerated pace. Domestic retail sales of passenger cars for January, February and March of 1929 probably have been in the neighborhood of 780,000 to 800,000, while overseas sales, including foreign assemblies, are estimated around 150,000 to 160,000.

Passenger car production for the United States and Canada probably has totaled above 1,250,000 and truck output above 175,000 for the first quarter of this year. These totals compare with 900,865 and 106,409, respectively, for the first three months of 1928. Stocks of new cars in the hands of dealers probably number some 250,000 more today than a year ago, the present stocks being estimated to be in excess of 600,000 cars.

Striking at any time, the huge percentage gains which the industry is making this year are unusually surprising because the quarter with which comparisons are made—the first of 1928—was itself a period of good business and satisfactory profits. The gains are being registered, moreover, in the face of a tightening money market and definite decline in the value of securities on the stock exchange.

Can we keep up the present pace and, at the same time, maintain a reasonable balance between retail sales

and production; between dealer profits and manufacturer profits; between new car stocks and used car stocks? These are the questions which many executives are asking these days; to which many are seeking an answer through weeks of traveling in different territories and days of contacting with retailers in their organizations.

If past experience is any criterion of future performance, the passenger car production figures piled up during the first quarter will constitute something like 25 per cent of the total output for the year, while about

30 per cent of the year's total will be built in the next three months—April, May and June. That would mean that second quarter production of cars this year would run around the million and a half mark. No such total seems likely, however. On this same basis, a total passenger car production alone for the whole year 1929 of something in excess of 5,000,000 would be predicated.

Expectation of such a huge passenger car output for the last nine months of this year does not seem to be justified when such factors as stocks of new cars in dealers' hands, the Federal Reserve attitude toward credits and the average rate of domestic sales are taken into consideration.

There is every reason to believe that the next three months will be satisfactory, both in sales and production, nevertheless.



The question of reasonably good business in the automotive field for the rest of 1929, in other words, doesn't seem to be seriously debatable at this time. Continuance of the record-breaking proclivities exhibited during the first quarter, however, does not seem likely.

Vigorous attention is being focused on increasing foreign sales by a number of manufacturers, both large and small. While the strenuously accelerated activity of Ford in Europe and the concentration of General Motors on its foreign markets have been filling financial news headlines, executives of smaller companies have been traveling abroad and strengthening their export marketing organizations, developing new plans for entrenching themselves in overseas markets and laying the foundations for sound future development of their merchandising activities in every part of the world.

That the future success-particularly the future growth-of many factory organizations lies in their success abroad is indicated by the steady increase of foreign in proportion to domestic sales. Foreign sales of American car and truck makers during the last three months, for example, constituted something like 15 per cent of their total deliveries.

Retail sales have increased materially over last year; continued increase is certain in the next three months. Stocks of new cars in dealers' hands have increased, as previously noted, by more than 250,000 over this time last year. Increased sales pace, of course, necessitates increased stocks. Have stocks increased too rapidly in proportion to sales pace? This question is being asked widely.

It cannot be answered definitely, because the answer depends not on what sales have been, but entirely on what they are going to be, in the next three months. Statistical calculations help to some extent in trying to determine an answer, but actual contact with a large

is a more accurate guide at this time. If the question were to be answered purely on the basis of statistics, the indications would be that new car stocks, taken as a whole, are increasing just a little faster than is warranted by the probable acceleration in sales pace during the second quarter. Reports covering hundreds of dealers in all parts of the country, however, fail to reveal any condition of serious overstocking anywhere, while retailers in several lines are definitely known to be unable to get enough cars to fill orders already on their books for several weeks.

The fact that Ford is beginning to catch up with deliveries in some areas and to get onto his dealers' floors a rea-

sonable stock of cars in many instances probably is responsible for a large share of the increase in total stocks today over a year ago. This fact in itself removes some of the fears which might be aroused by a purely statistical examination of the situation.

In five out of 13 important, but scattered areas from which Automotive Industries

has just received telegraphic reports regarding the Ford retail situation, Ford dealers are now able to make almost immediate delivery on most models. In the other eight areas reporting, however, most Ford Model A customers still have to wait for periods ranging from one to six weeks for delivery. Reasonably prompt deliveries on Fords are being made, according to these reports, in the areas surrounding such cities as Detroit, Seattle, Denver, Los Angeles and Kansas City, Mo. Deliveries still seem to be slow in the sections near Dallas. New York, Cincinnati, Milwaukee, Oakland, Boston, Chicago and Philadelphia.

The soundness of the current automotive situation both as regards new car stocks and second quarter sales outlook is further confirmed by the opinions of dealers in 18 major centers throughout the country. Reports from all except three sections indicate a first quarter well ahead of last year and a great majority show retailers to be extremely optimistic about the outlook for the next three months.

The only serious cloud in the business sky, as a matter of fact, would seem to be the tightening credit situation which is general rather than specifically automotive in its application and possible effects. Leonard P. Avres, vice-president, Cleveland Trust Co., sees the stock market as "taking business for a ride" and adds that "In the underworld the passenger who is taken for a ride usually ends the trip as a victim. The Federal Reserve System fears a similar outcome of the present ride and, assuming the role of a traffic policeman, has blown its whistle to halt the speeders.'

The possibility of tightening credit eventually affect-



ing car sales adversely cannot be entirely discounted. On this one basis, more than any other, rests the belief in some quarters that, while the automotive industry cannot fail to proceed on a sound, profitable basis throughout 1929, expectations of continued recordbreaking in sales and production during each of the remaining nine months probably are not justified.

The generally optimistic note of reports from the dealer field, however, indicate clearly a bright outlook for the second quarter. Following are some of the more important of the reports:

#### Detroit

New car sales in Michigan in March are showing appreciable gains over February. Spirited, sales campaigns conducted by various companies have contributed to the movement of cars. Dealers are exerting great pressure to reduce used car stocks through the medium of special sales. Ford dealers are now able to make immediate delivery on practically all but the much wanted models, such as tudor sedans. A short wait for them is necessary. Ford dealers are taking Model T Fords in trade in large quantities for the first time since the introduction of Model A.

#### Dallas

Automobile sales for the first quarter were about 12 per cent over those of the same period of 1928. The outlook for the second quarter is good for low-priced cars and fair for others. Ford March sales were 5 per cent over February.

Other dealers reported about the same business as in the preceding month. Ford dealer stocks are low. Other stocks are normal or about 2 per cent lower than at the same time last year. Used car sales are 4 per cent below February. Stocks are 6 per cent heavier than a year ago. Tire, accessory and parts sales are seasonal. Truck sales were 3 per cent below February.

#### New York

Sales of practically all makes of cars ran from 10 to 50 per cent ahead of last year for the first quarter. Especially marked increase has been shown in low-priced group.

Trading in used cars in increasing in this class. There are no indications of any burdensome accumulation of used car stocks.

Both Chevrolet and Ford sales still are somewhat hampered by slow deliveries.

In the higher priced fields sales are equally active and also involve a large number of trade-ins but generally speaking there is not the delay noticeable in the lower range. Very few dealers, however, indicate being overloaded with stocks of new cars.

Sherlock & Arnold figures for the first two months of the year show 18,456 cars sold in Greater New York as compared with 12,525 a year ago. Sales during the first week of March were 6427 as compared with 5557 a year ago.

#### Cleveland

With sales for March well ahead of the mark set in 1928, dealers predict a prosperous second quarter for the year. Movement in new and used cars was brisk with Ford taking fully 30 per cent of business. Ready market is reported for used cars with dealers' stocks not above normal.

#### New Orleans

All dealers expect appreciably increased sales for the second quarter. Sales for the first quarter only average or less. New and used stocks of all makes are normal. Noticeable gain in percentage of cars under \$1,200 class indicated.

#### Seattle

Retail car sales in the Seattle territory for the month of March were about 40 per cent over sales for February (which was an off month on account of extremely cold weather), and about even with March a year ago. Sales for the first quarter will be about 5 per cent above sales for January, February and March, 1928. With regard to sales for the second quarter, dealers will be satisfied if sales equal those of a year ago.

New car stocks are about normal for this season of the year, although car requirements for next quarter will be pretty heavy. Used car stocks are heavy, with the market at this time sluggish. Ford stocks are getting ahead and the plant can make deliveries

(Continued on page 536)

First quarter establishes record lead that second quarter bids fair to maintain

# Viking, Built by Oldsmobile, is 90 Degree V-Eight

Entirely new car, ready for April delivery, has all body models priced at \$1,595. Chassis has 125 in. wheelbase, while bore and stroke of engine are 3% by 35%

By A. F. Denham

LDSMOBILE has entered the eight-cylinder field with a Veight automobile, known as the Viking, which will be a companion car to the Oldsmobile F-29. The new car, priced at \$1,595 for all body models, is scheduled for delivery in April. Three different body models will be offered on the 125-in. wheelbase chassis, powered by a 33/8 by 35% in. engine, viz.: a five-passenger sedan, a close-coupled sedan and a convertible coupe. In appearance the cars present a well-balanced exterior. Hood, radiator and body lines are unbroken. The roof side panels are arched and deep. The cars are low, and their corners are well rounded.

The engine, a 90-deg. V-eight, developing 81 hp. at 3000 r.p.m., embodies a number of interesting design features, the valve mechanism being, for instance, of an entirely new character. The valves are placed horizontally in the vee of the engine and are rendered accessible by the removal of a cover plate. They are operated by rocker arms on a shaft immediately above the chain-driven camshaft. At the end of the latter is the gearing for the vertical distributor and oil pump drive shafts, as well as the fuel pump eccentric. Placing the distributor and oil pump at the rear has made possible good

valve chamber accessibility and the use of a sloping design for the aluminum alloy lower crankcase. To take full advantage of this design, a false removable pan, with transverse ribbing, is provided, which also slopes down toward the rear. Oil returning from the front-end drive housing and the valve chamber enters the pan at the front end, and any solid articles in it are caught between the ribs as it flows toward the pump at the rear. From there it is pumped to all bearings, including those in the upper ends of the connecting rods and those in the rocker arms.

Counterweights are provided on the three-bearing crankshaft. Connecting rods are of the side-by-side type, the left block being offset toward the rear. Pistons are cast iron, with all three rings above the pin,





The radiator emblem of the Viking carries a raised block V, which serves both as an initial and as an indication that the car is a V-eight

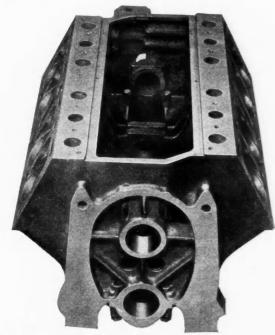
which is locked in the piston. Cylinders and crankcase are cast in a single unit, which makes for a more rigid construction. The engine is supported on rubber cushions at four points, the rear supports being inclined.

Joints of the demountable cylinder heads make an angle of 120 deg. with each other, which results in a combustion chamber of substantially triangular section, one corner being cut off by the valves. This shape, with the addition of a milled offset over the piston, permits of the use of a compression ratio of 5.2 to 1 without detonation. The valves have 30-deg. seats, which gives a greater effective opening for a given lift, and the springs are slightly tapered to prevent singing.

Water passages are unusually large, especially around the valves and in the cylinder head, and the temperature is regulated by thermostat-operated radiator shutters. Oil temperatures are kept down by ribbing on the oil pan and by water passages—the upper part of the crankcase. An air cleaner is provided at the crankcase ventilator inlet, and another one at the outlet connection to the carburetor.

The Johnson twin-venturi carburetor is connected to a down-draft manifold. The exhaust manifold

arches over the carburetor assembly and carries the exhaust gases from the left block to the main exhaust at the right. This manifold is branched vertically in the middle, the lower branch passing around the carburetor riser, while the upper branch provides a straight passage for the gases, unless the dash-operated heat-control valve is closed and deflects them to the carburetor. The exhaust manifold is ribbed for cooling. The A.C. fuel pump is operated by a cam on the vertical distributor shaft. Electrical units are of Delco-Remy manufacture. Mechanical shift is employed for starter engagement, and the spark advance is semi-automatic. The single-plate clutch, three-speed transmission and the Mechanics Machine two-universal propeller shaft assemblies are of conventional design. A ball bearing supports



Both banks of cylinders and the greater part of the crankcase are formed in a single casting

the transmission main shaft at the rear, while a Hyatt roller bearing pilots it at the front. The  $2\frac{1}{2}$ -in. propeller shaft is of heavy gage sheet steel, rolled and welded. A deviation from ordinary practice is found in the clutch pedal, which is supported on a bracket on a cross member instead of on the bell housing, and is connected to the throwout yoke by means of a cable, this design helping to keep engine vibration and noise out of the interior of the car.

Rear axles are three-quarter floating and have ball bearings on the differential and on the pinion shaft, while Hyatt roller bearings are used in the wheels. A final drive reduction ratio of 4.4 to 1 is used. Front axle centers are deeply dropped to secure low frame height without a drop in the frame at the front end. The ends of the axle are made of round section to better take care of brake torque. Springs are semi-elliptic all around, the rear being underslung and fitted with Tryon shackles. Lovejoy hydraulic shock absorbers are built into the car. The Jacox split-nut-and-worm type steering gear has an adjustable column.

Both shoes of the Bendix internal four-wheel brakes are of floating construction for self-energization in both directions. Emergency controls operate on the same brakes, connecting to the heavy central cross-shaft with "over-running" joints.

Frames are of heavy construction, having side rails  $6\frac{1}{2}$  in. deep and with 31/4 in. upper and  $2\frac{3}{4}$  in. lower flanges. There are five channel-type cross members, each being riveted to both the upper and the lower flanges of the side rails by means of pressed steel trusses. Diagonals from the center cross member to the frame side rails afford additional stiffness. The front cross member supports the engine through brackets belted to the cylinder block and resting on rubber washers. The rear cross members are connected by two

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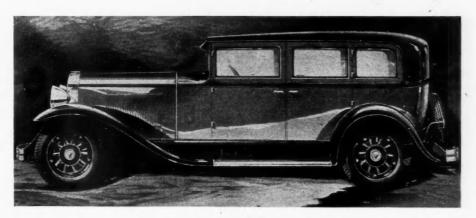
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#### Viking Mechanical Specifications

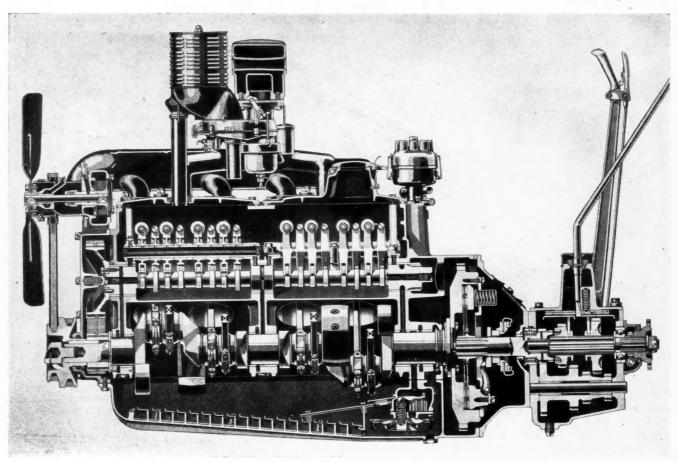
No. of cylinders	8—Vee
Valve arrangement	Horiz.
Bore and stroke	
Piston displacement	. 259.5 cu. in.
Rated hp.	
Compression ratio	
Engine suspension	
Cylinders and crankcase	
Main bearings	
Front	21/4 x 17/8 in.
Center	
Rear	2½ x 3½ in.
Camshaft drive	Chain (Whitney)
Piston material	. Cast iron
Piston length	37/8 in.
Carburetor	
Fuel feed	
Battery capacity	
Clutch	10 in. single plate
Clutch make	Borg & Beck
Gearset	3-speed
Gearset make	Muncie Products
Propeller shaft	Tubular 2½ in.
Universals	. 2-Mechanics Machine
Rear Axle	3/4 floating
Final reduction	4.4 to 1
Brakes	Bendix 4-wheel 2-shoe
Emergency.	Same
Drum diam.	. 14 in.
Steering gear	Jacox screw and nut
Reduction	17.1 to 1
Springs	
Front	. 37 x 2 in.
Rear	
Wheelbase	
Tires	
Chassis weight	2855 lbs.

longitudinal members, which also support the gasoline tank and serve as a base for the rear tire carrier, when standard wood wheel equipment is used. Demountable wire wheels, with fender wells, are available at extra cost. Tires are 6.00/18 in.

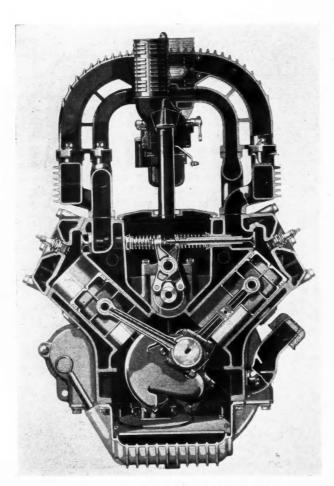
Viewed from the front, the narrow radiator shell, with wider center carrying the Viking emblem, the flush type filler cap, vertical vane radiator shutters, false radiator bottom, and large chrome-plated head lamps present a neat and strictly modern appearance. Viewed from the side, the length of the hood is emphasized by carrying the body belt molding forward in an unbroken



A side view of the Viking four-door sedan



Longitudinal section of Viking powerplant



Cross section through Viking engine

line and placing the vertical hood louver group at the rear. While cowl lamps are not provided, there is a chrome-plated saddle band at the cowl and hood joint. There is also a raised narrow saddle panel on top of the hood. From the rear, the cars are dressed by a cover over the gas tank. Both steering column and front seats are fully adjustable, and as an additional comfort feature, side cowl ventilators are provided. Felt pads under foot mats and on the dash insulate the front compartment, both as to heat and as to noise. Arm rests are provided in the rear of the sedans. Upholstery is mohair. In the windshields the VV principle is combined with a sloping glass to reduce light reflections to a minimum. Non-shatterable glass is used.

Instruments are individually mounted on an engineturned stainless steel panel, and are illuminated by two bulbs concealed behind a visor projecting from the top of the instrument board. The instruments include an engine thermometer, dash gas gage, ignition coil lock, and carburetor heat-control switch. Other equipment includes an automatic wiper, rear view mirror, vanity cases and smoking sets in the sedans. Exterior hardware is chrome-plated.

DeLuxe models, priced at \$1,755, are also offered. The cross-sectional view of the engine herewith gives a very good idea of the engine block, which is a rather remarkable casting. Practically all other eight-cylinder V engines now built have separate aluminum crankcases, while in this engine both banks of cylinders and the crankcase upper section are one piece. In the past, eight-cylinder V engines with iron crankcases sometimes have been split in a vertical plane, the two halves being machined at the joint surfaces and bolted together. The Viking construction eliminates this machining and also should give a more rigid structure.

## Centralized System Used to Lubricate Tools at Chrysler

N the radiator shell buffing department of the Highland Park plant of Chrysler Motors there are 50 double-ended buffing machines, with a total of 322 bearing surfaces requiring lubrication, all of which are automatically oiled from a central combination pressure and wick feed system, a product of Stanley Automotive Products, Inc. The industrial application of this company's system was developed at the instigation of K. T. Keller of Chrysler Motors.

The system is composed of a supply tank mounted overhead, with main feed line piping over the batteries of buffing machine. From the main feed lines copper tubing is connected down to each machine tool. Wicking is carried in these lines up to the bearing points.

To compensate for changes in viscosity with temperature, an air pressure line with a range of from 2 to 15 lb. pressure is incorporated in the supply tank system. The air pressure is controlled by a reduction valve from the shop floor as shown in Fig. 1, a dial being mounted in front of the valve, with an air pressure gage and air thermometer above. The dial is calibrated to the correct setting for varying temperatures, and reads in degrees. Any appreciable change in temperature is compensated for by the foreman's turning the dial indicated to the observed temperature.

Magnetically operated valves permit automatic shutting off of the oil supply at each buffing machine when not in operation. Since all buffing machines have in-

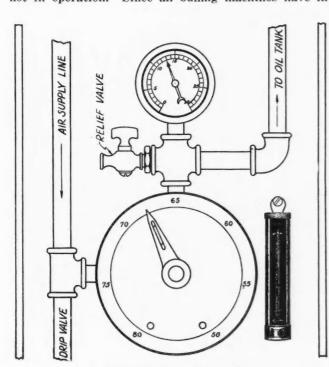


Fig. 1—Diagrammatic view of air pressure control system for central supply tank, to compensate for changes in oil viscosity with temperature

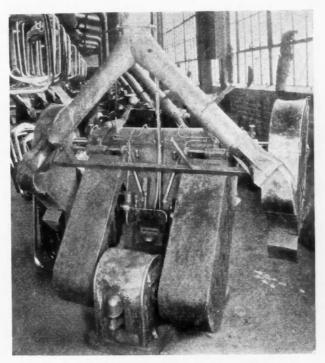


Fig. 3-On single-motor double-belt-driven double-ended ria. 3—On single-motor double-belt-driven double-ended machines there are two independent shut off valves, one operated magnetically by the electric motor circuit, the other by the system of levers shown here. As a result, when only one end is working, only that end is receiving lubrication

dividual motors, this installation is fairly simple, the switch button starting and stopping the motor also actuating the magnetic oil valve. Diagram of the usual installation is shown in Fig. 2. On some of the buffers, on which a single motor with belt engagement for each of the two buffing spindles is used, this installation is modified as shown in Fig. 3. Since the operator may forget to shut off his motor at the end of the day, by mere-

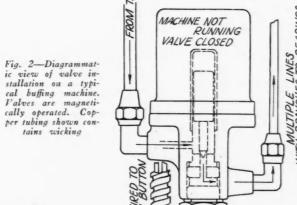


Fig. 2-Diagrammat-

ly throwing off his belts, two valves are supplied, the magnetic unit being supplemented by lever-operated plunger valves actuated by the belt shift lever. Oil consumption with this installation, which also covers lubrication of the conveyor driving units, has been in the neighborhood of 3 pt. per day for the entire division.

To check for adequate oil supply there is a trough at each bearing in which the spindle runs, supplied with an overflow drain. Several drops per day from this overflow indicates that the bearing is receiving adequate and not superfluous lubrication.

## General Motors Purchase of Opel Affects International Market

Size of German enterprise and wide distribution of product make it of more than local significance; American methods already in use.

By Herbert Hosking

N March 20, 1928, J. D. Mooney, president of the General Motors Export Co., speaking before the Export Managers' Club of New York, said: "The United States is, in truth, anything but an imperialistic nation. While it cannot be denied that we are building a great empire, it is one of economic alliances and personal associations, one represented by capital and personnel. Instead of appropriation of territory there is penetration of ideas, an infiltration of practices, the building of an industrial and commercial empire."

Prophetic words these! On March 18, 1929, Alfred P. Sloan, Jr., president of General Motors Corp., announced from Wiesbaden, Germany: "General Motors has formed an association with the Adam Opel Co. in Russelsheim, Germany, a substantial interest in that company being taken at a cost of approxi-

mately \$30,000,000."

This announcement came as official confirmation of a rumor which had been prevalent in the financial world since early in October, 1928, Weight was lent to the rumor by pointing to the case of Vauxhall Motors, Ltd., the English company which General Motors has controlled for some time. Finally, the departure of Mr. Sloan and Mr. Mooney for Germany was regarded as confirming rumors of the deal.

Exact data concerning the scope and activities of the Opel works were not forthcoming for the reason that, up until quite recently, the Opel family had operated the works as a closed partnership, and their financial transactions were not of public record.

Questions arose after General Motors took over the company: What did the \$30,000,000 purchase price represent in properties, and the potentialities of the product? What did the purchase mean to the German automobile market and to the international automobile market? What follows is a brief attempt

to throw some light on these questions.

A special cable from a correspondent of Automotive Industries in Berlin places the exact purchase figure at \$28,000,000. On January 24, 1929, the holdings of the Opel family were placed in a limited liability stock company. Shares were issued to the number of 60,000, with a par value of 1000 marks each, placing the total capitalization figure at something over \$12,000,000. The new company was understood to be a holding company for the Opel works. Public offering of some of the stock was made, but control was held by members of the Opel family. From this, it is surmised that General Motors paid \$28,000,000 for the approximately 76 per cent of the stock which represented the Opel personal holdings, or more than twice the par value of the paper.

Berlin cables to Dow, Jones & Co. on March 18, stated that a new board of directors would be elected, that it would be composed of five Americans and

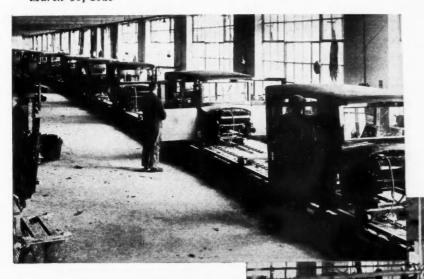
three Germans, and that Fritz Opel would be displaced as head of the firm by an American. This statement lacks the confirmation of General Motors authorities, but it seems reasonable to assume that General Motors will have strong representation on the directing committee of the factory.



Above: Opel plants at Russelsheim. Shops with a floor area of 57 acres are on the 100-acre tract. The main machining operations are done in buildings having many skylights

Right: The Opel 16 hp., 4-cylinder limousine. The production rate for this model is about 100 a day. Note the kick-plate, windshield visor and other modern closed car fittings





Left: Limousine bodies on the assembly line at the Russelsheim works of the Opel company. Final finishing of the bodies is done after the car has been tested on a concrete proving track

Below: Assembling 4 hp. engines for the "Baby Opel." Insert is the Opel name plate, which is as familiar in Germany as the Ford name plate in this country

Photographs by Courtesy of the Bureau of Foreign and Domestic Commerce

The importance of the Opel organization and the extent of its physical holdings are best understood by a resume of the historical progress of the company.

Adam Opel, the founder of the Opel works, began the manufacture of sewing machines in 1862. In 1886, the works began the manufacture of bicycles, and rapidly became one of the largest producers of bicycles in the world.

Automobiles of a primitive kind were assembled in the Opel works previous to 1900. The first car produced completely in the works was assembled in 1902. By 1904, a 4-cylinder car was in production, and a

torpedo type body had been entered in the Gordon Bennett races. The first commercial vehicle was made in 1907, and from that year until 1911, when a fire destroyed the major part of the works, progress of the company was rapid.

When the factories were rebuilt after the fire, it was decided to discontinue the manufacture of sewing machines and to concentrate on the production of passenger cars, trucks, fire engines, and bicycles. The new plants were laid out on modern lines, with multistory, well-center buildings. The production plan later was extended to include motor plows and motor boats. After the half-century jubilee of the firm in 1912, agencies were organized for the purpose of obtaining foreign trade. By 1913, 40 per cent of the output of the Russelsheim works was exported.

Following the war, the first attempt at standardized production was made with the commercial vehicle chassis. Attempts to extend the standardized mass-production principle to passenger cars met with a poor reception in Germany, because the bulk of the population was impoverished, and among the wealthier there was an aversion to the monotony of a standardized vehicle. But the company had faith in the idea, and in 1923 redesigned the production facilities of the plant to concentrate on a 4-cylinder, 4-hp. model. After a time, the idea was accepted, and the small car, which became known all over Germany as "the frog" because of its green color, was produced in quantities up to 120 a day.

The "Baby Opel," which remains the most popular of the 28 models produced in the Opel plant, has an overall length of 138 in., a four-cylinder monobloc

engine with a 60 mm. bore and a 90 mm. stroke, and weighs about 1400 lb. The actual wheelbase is about 99 in. It has balloon cord tires and convex disk wheels.

A six-cylinder model was introduced in 1926, and in 1927 a small 8-cylinder model made its appearance. The plant has a capacity of 300 cars a day, including 100 each of the small four and the small six. Many American machine tools help to supply the progressive assembly lines that are used in the production of the small cars. All component parts, with the exception of the tires and the electrical equipment, are produced in the Russelsheim works. There is a foundry at Dusseldorf to supply the large castings.

The covered area of the shops used in this production is roughly 57 acres, and there are 6000 machine tools contained in them. The annual power consumption is 14,000,000 kw. hr. Employees number 12,000 and there is an executive staff of 1000 persons.

The Opel distribution organization includes a branch sales office in Berlin, and sales depots in Magdeburg, Aachen (Aix-la-Chapelle), Dusseldorf, and Frankfort. Sales activities extend to most of the countries of the continent, and to South and East Africa. Dealers are picked with the understanding that they will handle Opel products exclusively. In February of this year, the basic price of the light four was reduced from 2700 to 2300 gold marks, less than \$600.

Mr. Sloan's statement issued on March 18 at Wiesbaden said: "The Opel company will continue to be operated as an independent organization by the pres(Continued on page 516)

# Just Among Ourselves

Is There a "Best"
Time for New Models?

ARE there any two best months in which to make new model announcements? important figure in the trade, who agrees with the view that car makers will continue to make their announcements at such times as seem to them to be most propitious, regardless of automobile shows or whatnot, says he thinks that a good many manufacturers are coming to think of December and January as the best months for such announcements from a general merchandising standpoint. It is hard to believe, however, that the proposition ever again will become as simplified as that. The effect of a new model on the retail sales curve alone is just one of many factors which must have equal consideration from the standpoint of the car maker.

#### Retail Sales Effect One of Many Factors

WHEN can cleaning up of factory material and parts inventory best be synchronized with cleaning off of old models from dealers' floors? That date is likely to be a matter of individual status for a particular factory, different every year or two and almost totally unrelated to the calendar. Factory production facilities must be rearranged and enough new models put through to enable dealers to have a supply at the time of public announcement, if full value from the presentation is to be obtained. Anybody who has been close to the actual day-to-day, normal engineering and manufacturing activity in an average, well operated automobile factory, is likely to be somewhat skeptical about the possibilities-or even desirability-of confining new model announcements within a brief

space of time. If every one of thousands of men did everything perfectly, always, some such scheme might be worked out practically; but even the best operated factories still depend on human beings to do their work, make their plans, and operate their activities. . . But more of this later. . . .

#### Gas Tax Abroad Would Help Sales

I INDERSTAND that a German commission of four men is coming to the United States to study the operation and functioning of the gasoline tax. Berlin Chamber of Commerce is responsible for stimulating the investigation, it is said. While there has been plenty of argument over here about the gasoline tax, there would seem to be quite definite advantages to American manufacturers were gasoline taxes generally substituted for the horsepower taxes which are common in Europe today.

#### To Be or To Seem To Be; That's the Question

JUST learned that Sinclair Lewis's new book "Dodsworth" is about an automobile manufacturer who sells out to an automobile trust. We haven't read it yet, but plan to do so in the near future and will report later. There must be some very realistic characters in the book, however, since Franklin P. Adams in a recent column remarks that Mrs. Dodsworth is a woman who "would rather seem to be something than to be something." Certainly there are plenty of folks like that in this world of ours, judging from the great financial success of the books of etiquette, the thumbnail sketches of literature designed to provide conversational rather than mental material and the raft of other short cuts to appearing like something which one isn't. That's one good feature about business and engineering. The results which a man achieves generally speak so loudly for themselves that seeming like what one isn't becomes so very difficult that it is usually easier really to do the job right in the first place.

#### Build Abroad and Sell Abroad is Trend

IT begins to look very definitely as though a majority of American-designed cars sold abroad eventually were going to be built abroad. Not only have the number of foreign assembly plants of several American manufacturers increased in number steadily during the last few years, but there has also been a distinct movement toward the actual manufacture of more parts in the foreign plants. Ford plans, as announced recently in Automotive Industries, involve eventual manufacture near London of practically all parts for cars to be assembled and sold in Europe, while General Motors is known to have a number of its experts studying foreign production possibilities carefully. The recent purchase of controlling interest in Opel by General Motors adds strength to the belief that more actual manufacturing activities will be conducted abroad in the future than in the past. With the foreign market expanding much more rapidly proportionately than the domestic and with this trend toward further production activities abroad, the future may bring some interesting employment and economic readjustments at home so far as the industry as a whole is concerned.-N.G.S.

# Hoover Cooperation With Industry Will Be Continued By Lamont

New Secretary of Commerce has automotive background and an intimate knowledge of the motor car market at home and abroad. Says American product has won "admiration of the world."

By Harvey L. Cobb

T is not only my desire but my determination to continue the Hoover type of cooperation with the automobile industry, declared Robert Patterson Lamont, Secretary of Commerce in President Hoover's cabinet, in his first interview after taking his oath of office. The new Secretary of Commerce predicted continuation of record-breaking production which will be necessary to supply expanding markets at home and abroad.

"Never in its entire history have conditions in the

American automotive industry seemed better than at the present time," he said.

"The year 1928 set a new alltime record when 4,360,000 passenger cars and trucks were produced, nearly a million ve-

hicles more than were turned out in 1927. January of this year set a record for any January in history."

Mr. Lamont did not seek the important position to which his friend. President Hoover, appointed him. He was "drafted." Mr. Hoover telegraphed him on Feb. 28 that he was "drafting" him for a cabinet job and it took Mr. Lamont but a few days to resign some 30 important offices in private corporations and hurry to Washington.

The Chicago business man brings a familiar knowledge of the automotive industry to the cabinet. At

the time of his appointment, he was president of the American Steel Foundries, an office he had filled successfully since 1912. He had served also as a director in Dodge Brothers and the International Harvester Co.

In addition to possessing an intimate knowledge of domestic

automotive conditions, Mr. Lamont has gained a thorough knowledge of foreign markets. As a member of a commission of the United States Chamber of Commerce named to make a study of economic and trade conditions in Europe, he was given an opportunity to observe carefully the European situation. It was through his service on this commission that he was thrown in close contact with President Hoover and the activities of the Department of Commerce which he now heads.

"I consider the outlook in the domestic market as decidedly favorable," he said. "Most automobile companies are reporting satisfactory earnings.

"The American car has won the admiration of the world

and official figures indicate that last year approximately 90 per cent of the total of automobiles in use the world over were American cars.

"Foreign trade in automobiles is becoming an item of increasing importance to the domestic industry. Reports reaching the industry show that during 1928 almost 10 per cent of the passenger cars produced in this country and more than 25 per cent of the truck output went abroad. The great increase in overseas business between 1922 and 1928 presages gratifying future export expansion. In 1922, when foreign

shipments were valued at something like \$105,000,000, that was considered a tremendous volume of export business. But last year exports had a value of more than a half billion dollars. A 400 per cent increase in six years."

(Continued on page 516)



Robert Patterson Lamont, the new Secretary of Commerce appointed by President Hoover

# Frames Get *Heavier*, Springs *Lighter* in Last 12 Years

Marked shift in weight distribution on passenger cars, analysis shows. Some parts weigh twice as much, others half as much as in 1917. Design changes responsible.

#### By P. M. Heldt

HERE has been a great shifting in weight in passenger car chassis during the past twelve years; some parts now weigh half as much again as they did in the models of 1917, while others weigh little more than half as much as they did then. It must not be concluded from this that the earlier cars carried a lot of excess weight, or that they had the weight incorrectly distributed. The changes in weight distribution noted have been brought about by changes in chassis design. For instance, the adoption of four-wheel brakes has added greatly to the weight of the front axle assembly, which includes the front wheel brakes, and the adoption of closed bodies has made it necessary to use frames of much greater rigidity and consequently of much greater weight.

Considered by itself, weight in automobiles is a detriment. This, of course, refers to excess weight, over and above that required to provide the necessary power and strength of parts, and the desired comfort for passengers. Other things remaining equal, any increase in weight results in a proportional decrease in accelera-

tion as well as in a decrease in hill-climbing ability and in maximum speed. Weight, however, is closely associated with size and roominess as well as with riding qualities, staunchness and cost. Hence while every designer strives to eliminate excess weight or unnecessary weight all of these allied factors must be considered and the problem of weight reduction is by no means a simple one.

One aspect of the problem as it presents itself to the designer is that of the most rational distribution of weight between the different parts. Since passenger cars range in weight from a little over 2000 to over 5000 lb., and in power from a little over 30 to far over 100 hp., it is obvious that corresponding chassis parts of different cars cannot well be of anything like equal weights. But there would seem to be no basic reason why the proportional weight of any given chassis part on the basis of the total chassis weight should be materially different in one chassis from what it is in another. Of course certain differences in design lead to differences in proportional weights. For instance, if

#### Weight Distribution in 1929 Passenger Car Chassis in Percentages of Total

Chassis Designation	1	2	3	4	5	6	7	8	9	10	11
Total weight of parts listed (lb.)	3255	2896	1868	3003	2704	1777	2000	2498	2649	2680	1785
Chassis with brackets	15.24	12.48	16.12	12.65	12.25	11.43	11.50	12.02	12.00	12.90	14.13
Front springs	2.61	2.11	1.52	2.53	2.00	2.48	2.20	2.57	2.72	2.69	2.72
Rear springs	3.47	3.45	4.02	4,53	4.25	4.73	4.20	4.57	4.30	4.26	4.43
Front axle with brakes	5.00	4.34	5.17	5.19	4.87	5.63	5.40	5.12	4.82	4.77	4.84
Rear axle with brakes		11.40	8.00	14.00	13.80	8.44	8.70	9.54	8.98	8.88	9.14
Front wheels with brake drums and											
tires	6.70	7.03	6.53	9.15	8.95	6.95	6.90	6.47	6.51	6.44	6.97
Rear wheels with brake drums and										****	
tires	6.76	7.27	6.72	9.12	8.88	6.98	6.80	6.61	6.57	6.57	7.03
Engine with carburetor, pump, fan,											
ignition unit and manifolds		31.16	35.68	23.15	25.22	36.25	35.77	33.95	35.75	35.40	30.38
Clutch	1.01	0.83	0.79	0.58	0.65	0.70	0.87	0.60	0.57	0.56	1.13
Transmission with housing and shift				0.00			0.0.	0.00	0.01	0.00	2120
lever	3.78	4.22	2.83	4.73	5.26	2.77	4.40	5.09	4.80	4.74	6.28
Parking brake (all parts of same)		0.84		0.62	0.67	0.49	0.46	0.59	0.54	0.55	0.63
Propeller shaft and universal joints	1.02	4.82	0.99	1.22	1.45	0.98	0.90	0.95	0.90	0.93	0.99
Muffler and exhaust pipe	1.47	0.67	0.78	0.97	1.07	0.70	0.97	1.23	1.16	1.15	1.20
Under pan		0.21	0.29	0.52	0.58	0.63	0.55	0.55	0.68	0.67	
Fuel tank, mountings and piping.	1.48	1.05	0.82	1.44	1.22	1.27	1.12	1.46	1.38	1.36	1.16
Electr. equipm't (bat., start'r, gen.)	4.51	3.60	4.66	4.51	3.97	4.56	4.59	4.10	3.86	3.82	4.84
Steering gear with wheel and drag		0.00	2100	-10-			-100		0.00	0.02	1.01
link	2.11	2.05	1.55	1.45	1.57	2.05	1.98	1.90	1.79	1.77	1.92
											2.29
Radiator	2.61	2.47	2.52	3.66	3.35	2.96	2.62	2.85	2.69	2.65	

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a car is equipped with a four-speed transmission, we may expect the transmission to be heavier than if the conventional three-speed gear-box is used. However, the general specifications of passenger cars are now so nearly alike that such variations as those referred to are limited.

Some twelve years ago the writer gathered data on passenger car chassis components and worked out their percentages and averaged them. Since that time numerous important developments have taken place in automobile design, and it was to be expected that the percentages would have changed materially in a number of instances. For instance, wheels are now made considerably smaller in diameter, from 28 to 32 in., instead of from 32 to 36 in. On the other hand, balloon tires are used instead of high-pressure tires. The application of brakes to front wheels has added to the weight of the front axles directly, as the axle carries the brakes, and also indirectly, because the axle, instead of merely supporting the load on it, also must withstand the braking torque.

In the first table printed are given percentage weights of chassis components of eleven 1929 models of passenger cars, on the basis of the combined weight of the parts listed. To give the weights as percentages of the weight of the chassis complete, but without bumpers, shock absorbers, running boards and fenders, is impracticable, since in many cases chassis do not come off the line in this condition, and this weight, therefore, cannot be determined directly by weighing, although it can be calculated. The eighteen parts listed in general make up from 95 to over 98 per cent of the weight of the complete chassis.

#### **Table Gives Averages**

The percentages for the different parts have been averaged, and these averages are given in the second table. In some cases the average given is not the exact arithmetical means of the percentages for all of the different cars, but a corrected figure differing slightly from this mean value. For instance, in one case where a torque tube drive is used the weight of the torque tube was included in that for propeller shaft and universal joints, and the figure given, therefore, is about five times as great as in the case of cars for which the weight of the propeller shaft and universal joints alone is given. There is, of course, no sense in averaging figures representing entirely different things, and so in determining the average proportion of the weight of propeller shaft and universal joints, the figure applying to this particular car was omitted.

It was, moreover, desirable to have the sum of the different percentages equal to 100, as the total weight of the parts listed is the basis on which the percentages were calculated. By taking the actual mean of the percentages for each part for the different cars, the sum came out to about 99.7, for reasons which it is not necessary to go into here, and a correction was made for this by adding small amounts to the larger percentages.

It is interesting to compare the proportional weights of parts of 1929 cars with those of 1917, which are also given herewith. In the first place we find that the weights of frames have increased more than 40 per cent, for whereas the frame constituted only 9.12 per cent of the chassis weight in 1917, it makes up 13 per cent in 1929. Probably the chief reason for this large increase in frame weight is the fact that nearly all cars now are provided with closed bodies, whereas in 1917 hardly any closed bodies were fitted to the lighter chassis, and

Percentage Weights of Parts Averaged

			Change
	1917	1929	(Per Cent)
Frame	9.12	13.00	+42.6
Front Springs		2.40	
}	9.12	}	-27.6
Rear Springs		4.20	
Front Axle	3.04	5.00	+64.2
Rear Axle	11.38	10.00	-12.1
Front Wheels	6.44	7.15	+11.0
Rear Wheels	7.97	7.21	-9.5
Engine	30.36	32.50	+ 7.0
Clutch	1.37	0.75	-45.2
Transmission	5.30	4.45	-16.0
Parking Brake		0.60	
Propeller Shaft	1.67	1.03	-38.3
Muffler and Pipe	1.13	1.03	-8.8
Under Pan	0.68	0.52	-23.5
Fuel Tank	1.21	1.25	+ 3.3
Electrical Equipment	5.38	4.28	-20.4
Steering Gear	2.11	1.83	-13.3
Radiator	2.72	2.80	+ 2.9
Total	100.00	100.00	*

closed bodies call for rigid and, consequently, heavy frames; if the frames are not rigid, trouble is soon experienced with doors and other parts.

Whereas the frames of modern cars are much heavier, the springs are much lighter. It was not possible in 1917 to get the weights of front and rear springs separately, but all of the springs of the chassis together in that year constituted 9.12 per cent of the chassis weight; in other words, the springs weighed exactly as much as the frame. In 1929 the front springs represent 2.40 per cent of the chassis weight and the rear springs 4.20 per cent. This makes a total of 6.60 per cent, so that the weight of springs has been decreased by 27.6 per cent. The great change in chassis weight distribution can best be realized by considering that whereas in 1917 the springs weighed the same as the frame, today they weigh almost exactly one-half as much as the frame. The reasons which have made possible the reduction in spring weight noted are not so obvious, but probably a number of factors combined to produce the result. In the first place, our roads are much better, and there is less need for the springs to take care of extreme deflections. It may be, also, that the use of balloon tires with their greater permissible deflection has led to a reduction in spring deflection. Finally, alloy steels are used for springs to a much larger extent than twelve years ago.

The proportional weight of the front axle has increased from 3.04 to 5 per cent. This increase of more than 60 per cent is largely accounted for by the use of four-wheel brakes on all modern passenger cars. The weight of the axle includes that of the brake shoes, the backing-up plate, brake anchorage and expanding mechanism. Since the front axle center now is subjected to torsion as well as to bending stresses, it is quite likely that the section of the forging also has had to be enlarged.

Rear axles now weigh exactly twice as much as front axles, on the average, their weight having come down somewhat since 1917 (12.1 per cent). The list includes a number of axles with torque tube drive, which naturally are heavier than axles designed for Hotchkiss drive, if the same materials are used and the same

safety factors allowed. It would appear from the figures collected that the torque tube or propeller shaft tube accounts for nearly 4 per cent of the total weight of the chassis. If the two classes of axles are separated, the average proportional weight is about 9 per cent for axles with Hotchkiss drive and about 13 per cent for axles with torque-tube drive.

Since front wheels and rear wheels are equal in diameter, carry the same size tires, and are both fitted with brake drums, the proportional weights are very nearly the same (7.15 and 7.21 per cent), the slight difference evidently being due to differences in the hubs. The foregoing figures represent an increase in the case of front wheels and a decrease in the case of rear wheels. The wheels themselves, therefore, evidently have decreased in weight, as would be expected in view of the smaller diameters now used, the increase in the weight of front wheels being more than accounted for by the weight of the brake drum, which is included.

Although it has been possible to reduce the specific weight of engines by increasing piston speeds, relatively heavier engines are now being put into passenger cars than was the case in 1917. It may be interesting in this connection to mention that the specific weights of the engines covered by the tables, inclusive of carburetor, pump, fan, ignition unit and manifolds, vary between 7.32 and 10.72 lb. per rated horsepower, the mean being almost exactly 9 lb. p. hp. The cu. in. displacement required per rated horsepower varies between

2.68 and 3.81, the average being 3.30. The weight of the engines per cu. in. displacement varies from slightly over 2 lb. in the case of V engines with aluminum crankcases, to an average of about 3 lb. for vertical engines with iron crankcases.

The proportional weight of clutches has been much reduced, which would be expected in view of the fact that single-plate clutches have almost entirely taken the place of the multiple disk type. Transmissions also are considerably lighter (15.7 per cent). This latter figure, however, is hardly a correct measure of the degree to which the weights of standard transmission have been reduced, for the list includes several cars with four-speed transmissions and with transmissions with a special device to facilitate gear shifting, which naturally weigh somewhat more than the ordinary three-speed gear-box.

That propeller shafts are considerably lighter than they were twelve years ago is probably due to the fact that they are now made of thin-walled tubing, while the earlier ones were solid and therefore had to have greater cross-sectional area.

Electrical equipment was in its infancy when the earlier compilation was made, and it is therefore not to be wondered at that it has come down in weight, the reduction amounting to an even 20 per cent. Steering gears also are built lighter, by about 13 per cent, while radiators remain practically unchanged at between 2.70 and 2.80 per cent.

### Hoover Cooperation With Industry Will Be Continued by Lamont

(Continued from page 513)

Mr. Lamont is looking for a suitable man to fill the post of chief of the automotive division of the Department of Commerce which became vacant through the resignation of H. O. Smith on Feb. 1 because of ill health. He wants a man for this post who is familiar with the manufacturers' problems and the export end and has indicated that the appointment will be made primarily on the recommendation of the industry. Another position of importance to the automotive industry, and which Mr. Lamont must soon fill, is that of automotive trade commissioner of Europe. This post became vacant through the resignation of H. R. Buckley, who had succeeded H. H. Kelly when the latter accepted a position with the Hudson-Essex Co.

Mr. Lamont prefers action to words. He is an engineer and business man and not a politician. He has relinquished all of his private business interests in order that he might be free to devote all his time and efforts to the post which grew to such great importance to business under the guidance of President Hoover.

Most of Mr. Lamont's time since coming to Washington has been occupied with the study of the policies established by President Hoover when he was Secretary of Commerce and with learning something of the organization of his department.

Always active in scientific research, Mr. Lamont was chiefly instrumental in establishing the astronomical observatory of the University of Michigan in South Africa. It was at the University of Michigan that Mr. Lamont received his education, graduating from the Engineering Department of that institution. For some time, he has been a trustee of the University of Chicago, of the Art Institute of Chicago, the Rosenwald Industrial Museum, and has been president of the St. Luke's

Hospital. During the world war, Mr. Lamont was made a major, and later a colonel, in the Ordnance Division of the army. For his service as chief of the Division of Procurement he was awarded the Distinguished Service Medal by Congress.

He is 62 years old and is the father of two daughters and a son.

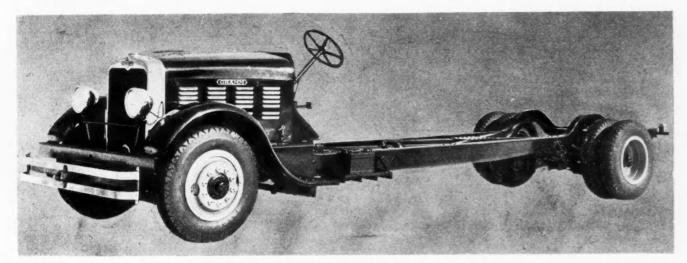
#### General Motors Purchases Opel

(Continued from page 511)

ent management which has made it such an outstanding success.... General Motors will contribute engineering, manufacturing, financing and managerial cooperation to the end that it is believed that Opel's already high efficiency can be still further enhanced and its business rapidly expanded."

Whatever happens, the German automobile industry is in for a reorganization if it is to meet the competition of an already excellent business, under the influence of aggressive American management. General Motors, through Mr. Sloan, already has signified its intention of developing the used car market of Germany to an extent not heretofore attempted. A half dozen of the leading automobile plants in Germany are prepared to combine resources in an attempt to meet the situation.

In a larger sense, the purchase of the Opel works cannot be regarded simply as a bid by General Motors for German business, but rather marks the entrance of American automotive capital into an alliance with German industrial life, a step which may have farreaching consequences in the development of a vast international integrated industry.



Chassis of Senior model of new Gramm van truck line

# Gramm Van Chassis Designed for High-Speed Work

Senior model has wheelbase of 236 in.; Junior is built in two wheelbases, 190 and 210 in. Six-cylinder engines in both types.

WO new van chassis have been announced recently by Gramm Motors, Inc., Lima, Ohio. These are powerful, high-speed vehicles for intercity moving work. The smaller of the two vehicles, the Junior, is furnished in two wheelbase lengths, 190 and 210 in., while the larger, the Senior, has a wheelbase of 236 in. The frame side rails are made with a drop at the rear end of the front springs and a kick-up over the rear axle, so as to bring the frame low and assure stability at high speeds. Stability is further enhanced by the use of wide treads, 66 in. in front and 70% in. in the rear in the Junior, and  $71\frac{1}{2}$  in. in front and 72 in. in the rear in the Senior. The height of the frame side rail at the front door when the van is loaded is 22 in. in the Junior and 24 in. in the Senior.

Both chassis are empowered by six-cylinder heavy-duty type engines. That of the Junior has a bore and stroke of 4\% by 4\% in. and a displacement of 428.4 cu. in., developing a maximum of 105 hp. The engine of the Senior has a bore and stroke of 4\% by 5\% in., a displacement of 611.34 cu. in. and a maximum output of 128 hp. Both engines have three-point support on the chassis on rubber mountings. The engines possess such features as nickel-iron cylinder blocks and pistons, full pressure lubrication, oil filtrator built in, silent chain camshaft drive and heat control to the inlet manifold.

Ordinarily 45-gal. fuel tanks are fitted, which are so installed at the rear of the chassis that they can be dropped without disturbing the body. A tank gage is fitted and a special vent permits rapid filling. Instead of these rear tanks, front-seat tanks of 25-gal. capacity may be had at no increase in cost. A duplex-type carburetor is fitted.

The electrical equipment comprises a six-volt De Jon generator with Leece-Neville voltage regulator, and a six-volt starting motor. The lighting equipment includes chromium-plated headlights with twinbeam control, a combination stop and tail-light, and dash lights. Lights on the chassis and body are controlled by means of separate switches and fuses. Ignition is of the two-point type with separate coils and condensers but a common 12-point distributor.

The radiators are of the flat-tubular type, the cooling water being circulated through them by a centrifugal pump with a single packing nut. Radiator shells are of polished cast aluminum, while the bottom tanks are of malleable iron.

Clutches are of the multiple dry disk type, with 14 facings in the Junior and 16 in the Senior; they are enclosed in a bell housing. Transmissions provide four forward speeds and one reverse, and have both shafts mounted in annular ball bearings. A three-piece tubular propeller shaft is used in each model, with four metal universal joints, the center section of the shaft being supported in a double-row self-aligning ball bearing, Alemite-lubricated.

The rear axles are of the full-floating double-reduction type, with four-pinion differential. A one-piece housing is used and the wheels run on Timken roller bearings. The reduction ratio of the final drive is 4.3 to 1 in the Junior and 4 to 1 in the Senior. At a maximum engine speed of 2200 r.p.m. the Junior has a road speed of 53 m.p.h. with 34 by 7 in. tires and 56 m.p.h. with 36 by 8 in. tires. Similarly the Senior, at a maximum engine speed of 1700 r.p.m., develops a road speed of 50 m.p.h. with 36 by 8 in. tires and 53 m.p.h. with 38 by 9 in. tires. Options are given on other final reduction ratios with both models.

# One Type Milling Machine Adapted to Many Jobs

Use of special interchangeable spindle heads and work-holding fixtures allows Substrand Rigidmils to be used for many manifold machining jobs.

MUCH credit for the success of automotive manufacturers during recent years in being able to change designs without retarding production or increasing units costs to any considerable degree must be given to machine tool manufacturers who have developed special high production interchangeable units for standard machine tools.

This trend, which has been discernible for several years, makes it possible to adopt standard machine tool equipment which is suitable for performing the machining operations on a wider range of products, simply by replacing interchangeable spindles, fixtures and other accessory items.

Some interesting examples of how this principle has been applied to milling machine work are given in the following actual operations being performed in several automobile factories on intake and exhaust manifolds. In every case the machine tool employed is a Rigidmil, built by Sundstrand Machine Tool Co., Rockford, Ill., and the machine itself is standard in every way. The various machining operations to be described have all been made possible simply by applying to the standard machine special spindle heads and work holding fixtures.

Fig. 1 shows a three-spindle head designed, as all the others to be described, to be used without alteration of the column of the machine in any way, so that when the particular job is completed or the design changed, the standard spindle head and overarm construction, or another special spindle head, can again be used.

In this job four pads on an intake manifold are being milled simultaneously. Two fixtures, each holding two manifolds, are used, with the alternating method of milling; the operator unloading and reloading one fixture while parts in the second are being milled. A

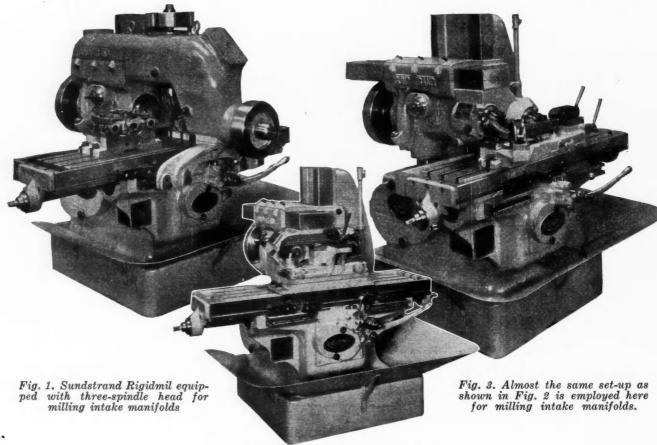


Fig. 2. Addition of a special twospindle head permits two pads of an exhaust manifold to be milled simultaneously

good finish is required on this job, and is possible because of the rigid head construction and the provision of a flywheel for each spindle. Spindle speed is 54 r.p.m. and a feed of  $6\frac{1}{2}$  in. per min. is used. The length of the cut is  $10\frac{1}{2}$  in. to a depth of 3/32 in., in cast iron material.

In Fig. 2 is seen another standard Rigidmil equipped with a special two-spindle head for milling two pads on an exhaust manifold simultaneously. A quick acting cam clamp locks and releases the part-only one being held in the fixture at a time. Automatic table control is provided which returns the table to the loading position at the completion of each cut. A spindle speed of 76 r.p.m. is used, with a feed of  $6\frac{1}{2}$  in. per min. and a cut of 5/32 in.

Practically the same set-up is employed for milling intake manifolds in this plant (see Fig. 3) as described in the last paragraph concerning exhaust manifolds. The two-spindle head permits milling two flanges simultaneously, with the part held in a cam clamping fixture. Automatic table control is used on this job and the same feed and speed as that used in the operation previously described.

A particularly interesting use of special equipment is shown in Fig. 4, in which a special six-spindle head is used in conjunction with a cradle type fixture for simultaneous milling of six pads on an exhaust manifold. Spindle speed employed is 75 r.p.m., with a feed of  $6\frac{1}{2}$  in. per min. to a depth of 5/32 in.

In the illustration the fixture is in the lowered posi-

Fig. 4. A special six-spindle head fitted to the Rigidmil permits six pads on an exhaust manifold to be milled in a single operation

Fig. 5. Another intake manifold is milled with a four-spindle head mounted on a standard Rigidmil

tion in which it is loaded and unloaded. After loading it is tilted to an upright position for milling. One manifold is milled complete at each setting. Quick acting cam clamps are employed to facilitate handling of the work in and out of the fixture.

A final example of the specialization which may be obtained from standard machine tools is shown in Fig. 5 and illustrates how four pads of another intake manifold are milled in a single operation. The standard Rigidmil has been fitted with a special four-spindle head and a simple work-holding fixture with cam operated clamps. Spindle speeds are 76 r.p.m., feed  $6\frac{1}{2}$  in. per min., and depth of cut 5/32 in. Automatic return of the table to the loading position is provided, as in other jobs of this nature.

In March, 1928, the Bureau of Standards began testing new commercial airplane engines as a basis for the granting of approved type certificates by the aeronautics branch of the Department of Commerce. The type certificate authorizes the use in licensed aircraft of any engine conforming to the specifications of the engine submitted for type test and specifies the speed and power rating of such engines. To date, 21 type tests have been undertaken at the bureau, and of this number 4 engines have been withdrawn, 11 have failed, and 6 have completed the test successfully. The results show that the average manufacturer should do more development work before going into production and indicate the importance of type testing as a protection to the public.

The following engines have been approved and rated as a result of type tests at this bureau:

Kinner (5-cyl. radial air-cooled), 90 rated hp. at 1810 r.p.m.

Velie (5-cyl. radial air-cooled), 55 hp. at 1815 r.p.m.

Comet (7-cyl. radial air-cooled), 130 hp. at 1825 r.p.m.

Axelson (7-cyl. radial air-cooled), 115 hp. at 1800 r.p.m.

LeBlond (7-cyl. radial air-cooled), 90 hp. at 1975 r.p.m.

Harris (8-cyl. Vee water-cooled), 90 hp. at 1400 r.p.m.

The Warner "Scarab" engine was approved and rated 110 hp. at 1850 r.p.m. on the basis of a test at Detroit, observed by bureau engineers, before the present regulations went into effect. Thirteen other engines, including, for example, the Curtiss "Challenger," the Wright "Whirlwind," and the Pratt & Whitney "Wasp" have been approved on the basis of Army or Navy tests and have received commercial ratings recommended by the bureau.

The number of airplane engines intended primarily for commercial use which are under development at the present time exceeds all estimates made last year.

# Simple Cost System

Use of standard times for all operations and an effective factory budget results in economies and better direction. Overhead costs controlled.

THE application of simplicity and good common sense to cost accounting has demonstrated a marvelous saving in time and money to the Auburn Automobile Co. The adaptation of standard times for operations and the use of a very efficient budget system in our factory has in itself more than paid for the effort and expense of installation. Especially pleasing has been the result of the budget system when adapted to our non-productive factory departments.

The use of this system is quite simple, involving only an intimate knowledge of working conditions at the time and a reference to the experience tables which have been made up by our factory superintendent covering the records of a few years back. The experience tables tell us that in the past when we are producing a certain number of cars it has been necessary to maintain a certain number of steam fitters, oilers, material handlers, sweepers and janitors, and millwrights, etc. Therefore, it is only necessary to use the experience of the past in regulating the overhead of the present.

The Auburn Automobile Co. is one of the oldest successful manufacturers of pleasure cars in existence today and its success is based to a large degree upon the emphasis which has always been placed upon economy of operations. Red tape and expensive efficiency systems have been frowned upon, expenditures of large sums of money for buildings and equipment have been carefully and thoughtfully considered before consummation with the result that our company can now exhibit a very lucrative balance sheet, something which is especially pleasing to our stockholders.

There is only a small percentage of parts which go into the direct material cost of our automobiles which are fabricated in our own plant. Nearly all the units come to us as rough, semi-finished, or completely finished parts. From the accounting standpoint therefore, we find it best to consider all material received as productive merchandise and we carry it in that category all through our cost procedure up to the time that the transfer is made to a finished car.

The importance of a method to accurately record the transactions relating to the purchase and consumption of material is apparent when we consider that the greatest proportion of the cost of manufacturing our cars in our plant is represented by the actual outlay for the material entering into the fabrication of the cars themselves.

A few years back, before the Auburn Automobile Co. entered the ranks of the large producers of pleasure cars the method of recording the material transactions was somewhat as follows.

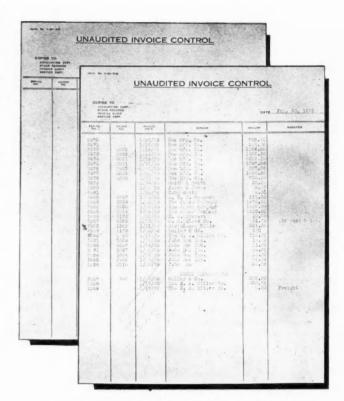


Fig. 1—Unaudited invoice control on which is listed all invoices received during the day and is used for a check for entry work by the various departments

At the beginning of an accounting period, the inventory of production merchandise was divided as follows:

Stock Merchandise—Under which heading was placed all the materials and labor in finished cars and classes together with all the other kinds of material which enter directly into the car, except such materials as have a separate classification, which were the following:

Sheet Metal—Under which was classified all sheet metal which before inventory time was not placed on cars in the assembly line, but includes labor, and in some cases, paint on sheet metal parts.

Paint—Which represented the quantity and value of paint on hand but not yet applied, and lastly the amount of:

Trimming Material on hand with which the various models of cars were upholstered; tops are built, but did not include the value of trimming material on finished bodies or cars.

The materials as purchased were then also charged

# Gives Auburn Accurate Data Quickly

By J. W. McIntyre

Industrial Engineer, Auburn Automobile Co.

to these four accounts. When cars were sold the material accounts were credited with the estimated amount of material which entered into the different models. Thus all trimming material on a car as it was sold was credited to the account under which the trimming charges were recorded, the sheet metal account with the value of the sheet metal on the cars sold, the paint account with the estimated value of paint used, and the balance of the material was in turn credited to the general material account.

This method resulted in figures which were somewhat distorted. For instance, when a car, which was in the opening inventory, was sold, the trimming, paint, and sheet metal accounts received credit for material which had been charged to the stock merchandise account. Other incongruities were also apparent under this old method of material classification on the accounting records but we will not allude to them here.

As our company grew, and our duties expanded, and the operations became more manifold, this system, due to the defects mentioned has been superseded by a very efficient system of accounts and procedure which has proven quite satisfactory and has met with the approval of our auditing companies.

Many times the invoice for the goods which we buy

J. W. McIntyre, a uthor of this article, is industrial engineer of the Auburn Automobile Co., a position which he has held for the past three years. He has been connected with this company for a period of 10 years

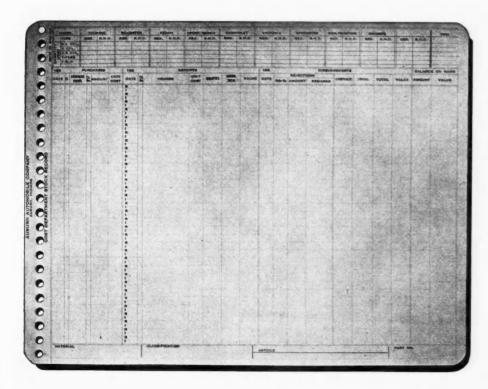




arrives ahead of the material itself, and consequently ahead of the receiving slip with which it must be matched. In view of this circumstance we are able to arrange the routing of our invoices through several of the departments before the matching operation is performed.

The invoices upon being received by the mailing department are brought immediately to the Invoice Audit Division of the Cost Department where an unaudited invoice control sheet is made out. Before the invoices are entered on the control sheet each one is numbered, both original and duplicate, in series, with a Bates numbering machine; thus we establish a control which governs the handling of these invoices. In case where a duplicate has not been furnished a memorandum is made out from the information on the original.

The originals of the invoices are then routed through the Purchasing Department, and Accounting Department back to



the Invoice Audit Division where they are audited and matched with the receiving report. They then go to the Material Control Division. The Unaudit Invoice Control register is made up from the duplicate copies of the invoices, in the meanwhile, and lists on it the

serial number which has been allotted to the invoices, the order number, and the invoice date. It also lists the vendor's name and the amount of the invoice. Copies of this control register are sent to the Accounting Department, to the Material Control Division of the Cost Department, to the Service Department and one is retained by the Invoice Audit Division. By checking against these sheets each department can be assured that they receive every invoice (Fig. 1).

When the original invoice arrives at the Material Control Division it is listed under the receipts portion of the main stock record sheet. This stock record is a visible binder form and contains all the productive items used in the manufacturing of our cars as well as those items which can be classified as experimental or sample units (Fig. 2). It has provision for the listing of the purchases with their date, number, amount and unit cost. The receipts against these orders, which information is obtained from the vendor's invoices and our receiving reports, are also listed, giving the date, vendor's name, cost and quantity received. Disbursements

from the balance on hand are listed after merchandise is drawn out by the Production Department or by the Service Division. Provision is also made for listing that material which has been returned to the vendor for repair, replacement, or to be credited to our account. Frequent reports are issued by the Material Control Division to the Purchasing and Productive departments as to the quantity and condition of stock on hand.

From the unit costs as listed on the main stock

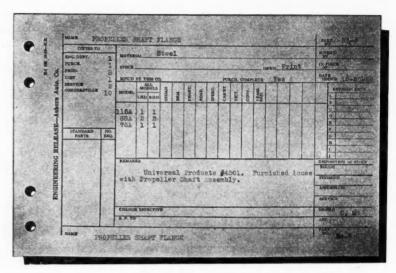


Fig. 3—An engineering release is issued by the Engineering Department as authority for the purchase of material and is later used by the cost department in making up its bill of material

record sheets the material costs of the different models are compiled. Using the Releases which are issued from the Engineering Department a bill of material for each type is built up (Fig. 3). These

items are arranged on 3 in. x 5 in. Cards, Form C D-114, called Parts Cost Cards (Fig. 5). This card has provision for the name, part number, and model for this particular part, also the name of the vendor, and the description of the part. The unit cost is noted hereon, also the weight and the number used per car. One corner is blocked off and arranged so that the total costs may be given in case there are more

than one of these parts used on a car, provision is also made for the date, and in case of a change a line is drawn through the first entry and the new cost listed below, thus giving a record of past experiences.

Along the upper edge of this card are arranged eight 1/4-in. holes. Each one of these holes represents some particular type of car; for example, the first hole represents the touring, the next the victoria, the next the sedan, next the convertible phaeton, next the cabriolet, next the sport sedan, next the speedster, and then the chassis. In case the part listed hereon is not used

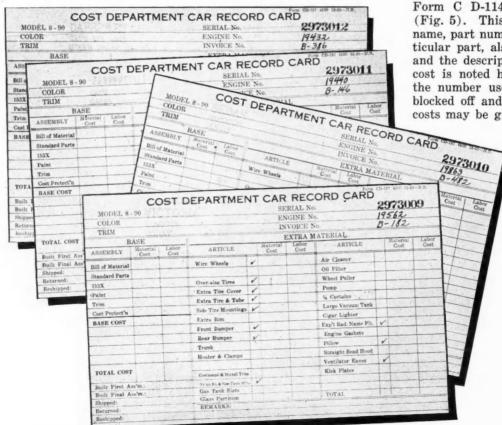


Fig. 4—Cost department car record cards are made out for every automobile produced and contain not only information as to the cost of the car but general data, such as engine number, color, trim, special equipment, etc.

on any particular one of these models, the hole representing this model is then clipped out. These cards are then arranged in a metal drawer according to part numbers, and all that is necessary to find the entire material cost of any type, let us say a touring car for instance, is to run a small rod like a knitting needle through the first set of holes. All the cards which lift out belong to that type.

With our present program calling for such a multiplicity of different colors, trimming and models no small amount of importance attaches itself to the keeping of the Car Records. These records are maintained on 5 in. x 8 in. Cards, Form CD-136, and the information is listed so that a record may be kept of the progression of the car from the time it is started on the assembly line until the actual sale is consummated. When the report comes from the inspection in the first assembly that a certain car has been started,

the serial number and motor number and the date are noted down on one of these cards by the clerk in the Car Record Division. These cards are printed on different colored stock for the different models.

After the original entry has been made the cards are filed by serial number, and are held pending a report which comes from the inspector in the final assembly, stating that the car has been completed there. Upon its receipt the Car Record clerk makes further entries on the card listing then the color, type, kind of trimming, date on which it was completed, and signifying what extra equipment was on the car at that time. He then files the card again awaiting instructions from the shipping department. At the time of shipment the card is again produced and the date entered and any additional equipment



Fig. 5—Parts cost cards are used for determining the base cost of each automobile. Examples show how holes in top of cards are clipped out to designate the models on which the parts are used

or changes which may have been made previous to shipping are noted thereon. The cards are again filed in the drawer awaiting the sale of the car. At the time of the sale they are stamped with the date and filed in the reserve files.

At the time the entries are made showing the car was completely assembled, the costs are placed on the card. The extra equipment material cost and labor cost being kept separate from the base car cost. Thus at any time, the cost of the finished cars in the plant, or those on consignment or the cost of car sales may be determined by totaling the respective set of cards representing those cars in question. They can be so arranged as to show the different types separately if so desired, and the extra equipment may be segregated easily either as to quantity or value or both.

### Cardinal Two-Passenger Monoplane



# Simplification of Airplane Design is Proceeding Rapidly

L. M. Woolson, Packard aeronautical research engineer, cites better control at low flying speeds, better aerofoils, and improved power loading factors as examples.

ONTRASTING air transportation with ground transportation from an engineering standpoint, in a paper read before the Cleveland Section of the S.A.E., L. M. Woolson, aeronautical research engineer of the Packard Motor Car Co., said it was true that improvements in planes must be brought about in order to simplify their operation, but this development is proceeding very fast. He mentioned the following

Civilian Planes in Use

16000

September 12000

TOTAL CIVILIAN PLANES

AIRWAY PLANES

1928

1929

YEAR

Fig. 1-Increase in use of civilian planes since 1926

improvements in planes since the war, saying that these had helped materially to simplify operation:

It is universally conceded that landing a plane is the operation requiring the most skill and experience. In this respect improvements have consisted in obtaining better control at low flying speeds by means of more efficient ailerons, elevators and rudder; less tendency to nose over by locating the landing gear further forward with respect to the center of gravity of the plane: far better shock absorbers, preferably consisting of some form of hydraulic control instead of the old style elastic cord shock absorber; improved aerofoils tending to minimize inadvertent stalling; improved power loading factors resulting in superior recovery from the stalled position. All of these things have resulted in making the landing of an airplane a somewhat more fool-proof proposition than was the case with military type planes which were adapted to commercial use at the end of the war. However, much more remains to be done in this connection and under the stimulus of the \$100,000 prize offered by the Guggenheim Foundation, for which several famous entries have been received already, we may look for far-reaching results within the next year or so.

Continuing, Mr. Woolson said the taking off of a plane requires somewhat less skill than landing, although perhaps better judgment is required to avoid serious consequences in the event of engine failure at this critical time. Once in the air and at a reasonable altitude, the control of an airplane is a very simple task quite comparable to steering a bicycle, in that lateral and fore and aft trim and directional control are readily handled, assuming reasonably smooth air, with little mental or physical effort—far less than that required for driving an automobile under any conditions.

There remains, however, much to be done in improving the pilot's vision directly ahead and practically no plane can be considered ideal in this regard. Furthermore, in respect to noise from engine and propeller, much remains to be done, although many enclosed cabin planes show marked improvement in this respect. With such drawbacks removed, flying an airplane promises to become one of the most fascinating experiences open to mankind.

Aviation has reached a stage of development where its future growth is limited only, on the one hand, by provision of additional facilities in the form of airports and their equipment, and, on the other hand, by the reduction in cost and improvement in quality associated with the enlargement of manufacturing facilities to correspond to those of our great automobile factories. A very healthy growth is assured by extensions in

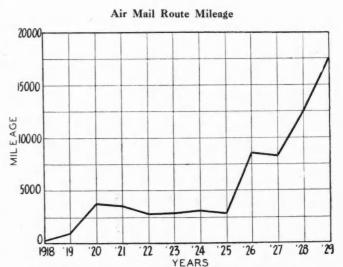


Fig. 2—Growth of air-mail routes since the service was introduced

these two fields, but it may be of interest to give a little thought to the basic soundness or economic worth of

this new form of transporation.

So far the novelty and, consequently, the popular thrill of flying have, in a great measure, contributed to its rapid growth. It is true that a saving in time consequent to the use of this form of transportation has been widely advertised, and our wonderful air mail service gives daily evidence of its efficiency in this regard. However, sooner or later any form of transportation must be judged on the basis of what it does in competition with other available means.

keeping statistical data would not be of particular interest to a group of engineers.

A very small part of the complete picture relates to the efficiency of fuel utilization in several different methods of transportation, namely, railroad passenger and freight services, automobile and motor truck operations, trans-Atlantc steamship line, and finally, two classes of air transport, viz.: a high speed tri-motor passenger plane using gasoline engines, and a single-engined cabin plane using a Diesel engine.

Mr. Woolson said he realized that in presenting these figures he exposed himself to very justifiable criticism

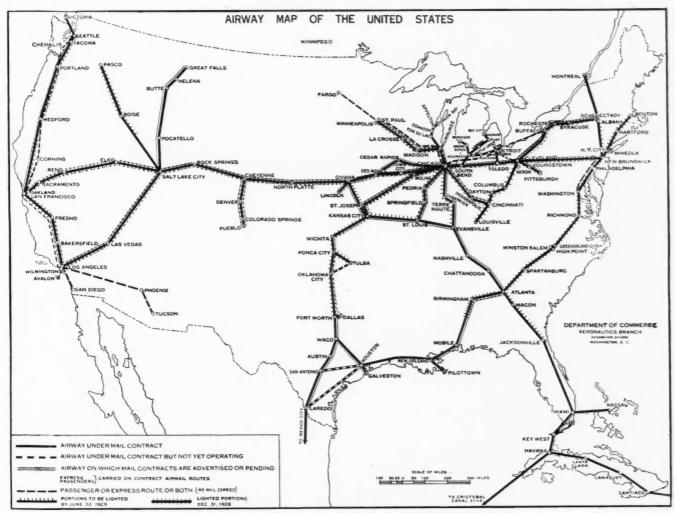


Fig. 3-Up-to-date map of air lines in the United States

Naturally, at this early stage in commercial aviation there does not exist in accessible form the vast amount of statistical information which would be necessary in order to arrive at any very definite conclusions and this, of course, results from the rapid evolution of the art which does not stand still long enough, so to speak, to obtain the time exposure necessary for a statistical photograph.

In other words, if, for example, it was desired to compare air transport with railroad transport on a logical basis, it would be necessary to have at hand reliable data of a very extensive nature covering items such as capitalization per mile of route, overhead, depreciation, fixed charges of all kinds, operating and maintenance charges and the thousand and one items which would enter into a complete analysis of the two forms of transportation, say on a cost per ton-mile or passenger-mile basis. Furthermore, much of this book-

in that the complete picture might not reflect the indications of those portions which he showed. And his only defense was that the data itself were undoubtedly reliable so far as statistical information of this sort goes and although the comparison of fuel efficiency may not be a just one on which to base the all-around efficiency of any particular scheme of transportation, yet there is every reason to believe that the majority of the fixed charges of these various transportation systems will be more nearly alike than these fuel costs appear to be, so that if we have succeeded in picking out the largest variable among the many factors which must be entertained in making a complete determination of the relative efficiencies, we are at least examining that quality which has the biggest single influence on determining what we might call a figure of merit for each form of transportation.

In Fig. 4 the performances of a typical freight train,

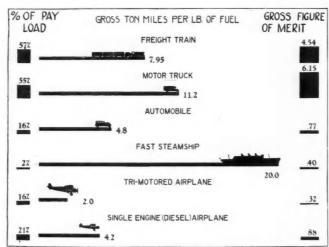


Fig. 4—Transport services compared on the basis of passenger-miles per lb. of fuel

motor truck, passenger automobile, steamship, tri-motor plane and Diesel engine plane are given in terms of gross ton-miles per pound of fuel, and the ratio of pay load to total load is also given, which ratio, of course, constitutes a very important factor in making comparisons between such widely different forms of transport. Then taking this percentage of pay load into consideration and multiplying it by the gross ton-miles per pound of fuel, we obtain a figure of merit given in the last column which indicates in a general way the efficiency of fuel utilization in each particular field, disregarding the rather large variation in B.t.u. content of the different fuels employed.

This chart reveals some rather interesting information which may be worthy of brief consideration. It is evident that the motor truck is the most efficient vehicle shown and this results not only from the fact that it carries the highest percentage of pay load but also because it is using a highly refined and economical engine. The freight train suffers slightly by comparison but in this connection it should be realized that the railroads are making tremendous strides in reducing their fuel consumption. For example, the New York Central lines made a 22 per cent improvement in this regard in the five years elapsing between 1923 and 1928. With more extensive application of the Dieselelectric principle to locomotives and increased electrification activities there is no doubt that the railroad will succeed in closing down the gap now existing on this chart.

Third place in this tabulation is taken by the Diesel engine plane although a considerable distance behind the leaders, but it will be noted with a comfortable margin over its nearest rival, the passenger automobile. This margin would be considerably increased if two other facts were taken into consideration. One is that the specific fuel cost of the Diesel plane is roughly one-half that of the automobile, and the other is that the airplane generally reaches its destination by a straight line flight, whereas all forms of surface transportation are handicapped by having to travel at least 25 per cent further, due to the contour of the country and the general amount of detouring necessary to take in the principal cities en route.

It is rather interesting to note that although the steamship employs a very highly developed form of powerplant and makes the best showing in terms of gross ton-miles per pound of fuel, it is unable to overcome the tremendous handicap imposed by the very small percentage of pay load carried.

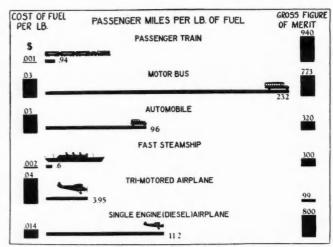


Fig. 5—Transport services compared on the basis of gross ton-miles per lb. of fuel

The next chart, Fig. 5, gives somewhat similar information in terms of passenger-miles per pound of fuel. This comparison is somewhat more favorable to the railroad, which has the best showing, followed closely by the Diesel-engined plane. The motor bus comes third in this tabulation, due largely to its reduced pay load capacity. The airplane using three gasoline engines suffers from the relatively high cost of fuel as well as the excess power which is considered essential to safety in the present stage of aircraft development.

Summing up, it would appear from these charts that in so far as the carrying of freight is concerned, there is little possibility of the airplane ever competing with either the railroad or the motor truck. Where the element of time enters, as in express service or the shipment of valuable products, such as silk or perishable out-of-season fruit or vegetables, it is quite reasonable to expect that more extensive use of air transport will be warranted in many cases by the speedy service rendered. Considerations of passenger traffic, however, indicate a very bright future for the practically universal adoption of air transport, since it is evident that on economic grounds it compares very favorably with any form of surface transport and the tremendous saving in time will represent an overwhelming advantage which cannot be met by any conceivable improvement in existing forms of surface transport over reasonably long distances.

In concluding his paper Mr. Woolson said that he submitted the charts Figs. 4 and 5 with reservations as to the conclusions to be drawn therefrom, and that he would appreciate criticisms of the charts from qualified parties.

#### Continental Crankshaft

In the description of the Continental seven-cylinder radial aircraft engine published in our issue of March 9, it was stated that the crankshaft was made of chrome-nickel steel. We have been informed that this was an error, and that the shaft is made of chrome-vanadium steel.

ERMANY'S consumption of liquid motor fuels in 1928 is estimated at 1,272,000 metric tons. Of this amount, about half a million tons were of domestic production, including 320,000 tons of benzol, 150,000 tons of synthetic gasoline from coal, 10,000 tons of synthetic gasoline from lignite and 20,000 tons of denatured alcohol.

## Federal Has New 1½-Ton Model Priced at \$1,395

Is powered by six-cylinder Continental engine, bore and stroke of which are 33/8 by 45/8 in. To be made in three wheelbases. Wheels are cast steel spoke type.

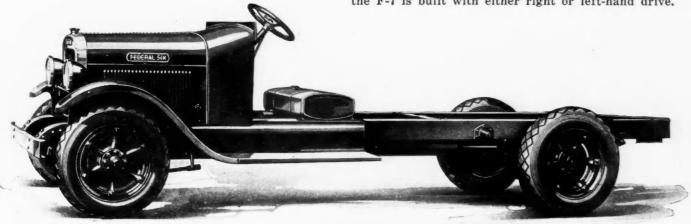
A NEW 1½-ton truck, the F-7, is announced by the Federal Motor Truck Co. With a chassis price of \$1,395, it is the lowest-priced 1½-ton model ever produced by Federal. The lower cost is said to be due to lower production cost resulting from larger scale manufacturing operations scheduled for 1929 with the completion of additional manufacturing space to house the body and cab plant,

the shipping department, etc.

The new truck is powered by a Continental 16-C 3% by 4% six-cylinder L-head engine. In unit with the engine are a single-plate 11-in. clutch and a fourspeed spur-gear transmission. Back of the transmission is mounted the two-shoe expanding emergency The truck is available in three wheelbase lengths of 132,144 and 152 in., the two larger models having a two-piece propeller shaft and three universal joints, while the standard wheelbase model has a one-piece tubular shaft. Rear axles are of Timken manufacture, full floating, with a tread of 57 in. Service brakes are of the hydraulic four-wheel expanding type, with a self-compensating master cylinder. Springs are semi-elliptic all around and unusually heavy at the rear for a truck of this tonnage. Front axles are of the usual I-beam type and have a 57-in. tread. Front wheels are mounted on tapered roller bearings, the same as the rear. All wheels are of the cast steel spoked type, with 20-in. rims, fitted with 30 by 5-in. tires at the front and 34 by 7 at the rear. A variety of tire options, including dual rear tires, are available at additional cost. Frames are designed to be exceptionally sturdy, with side channels  $5\frac{1}{8}$  in. deep, the entire length from the dash back. While side channels are parallel from the dash back, the frame is narrowed at the front from 34 to  $30\frac{1}{2}$  in. The steering gear is of the worm and sector type.

Unit mounting of Federal's four-speed transmission is a new development. The low gear reduction is 5.00 to 1, with direct on fourth. Bearings are of the anti-friction type. Lubrication of the clutch throw-out bearing is by means of an oil cup on the clutch housing. The tubular propeller shaft is rather larger in diameter than usual, and the two-piece type is provided with a selfaligning center bearing. The rear axle pinion is straddle-mounted. Timken roller bearings are being used throughout this unit. The standard ratio of  $4\,6/7$  to 1 gives an overall low-speed reduction of 24.28. Fuel feed is by the vacuum system from a 20-gal. tank mounted under the seat on flanges riveted to the frame side channels. These flanges also carrying the cab. Frame stock is \( \frac{1}{4} \)-in. thick and all brackets and cross members are hot-riveted. Front-spring, front-shackle pins are in the form of a solid rod extending across the frame just back of the integral channel bumper and serving also as a frame cross-

A walnut-finish instrument panel with indirect lighting is a new departure for Federal. Spark and throttle controls are mounted on the 18-in. steering wheel with the ignition switch and choke on the instrument panel. An air cleaner and a fuel filter are included in the standard equipment. For export the F-7 is built with either right or left-hand drive.



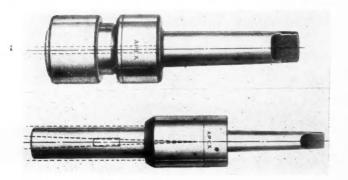
Side view of new Federal 11/2 ton chassis

## NEW DEVELOPMENTS\_Automotive

### Apex Floating Tool Holder

THE Apex Machine Co., Dayton, Ohio, has brought out two new floating tool holders. One permits the tool to enter the work on a straight line when the machine spindle and the work do not line up but the axes are parallel. The other, which is a full-floating selfaligning tool holder for single or multiple spindle operation, will take care of any angular irregularities

space between threads. When the nut comes in contact with the part to be bolted, the top of its thread is pressed in the direction toward the large diameter end of the space between threads on the bolt, whereby a wedging action is produced which securely locks the nuts. This locking action is constant along the whole threaded length of the bolt. The nuts can be readily unscrewed with a wrench and can be used repeatedly.



Apex floating tool holders

between the tool and the work and also allow the tool to float parallel to the axis of the rotating part. The floats in both holders are ball bearing and in the full-floating tool holder, the angular alignment is adjustable. Both tools are furnished in several different sizes with either straight or Morse Taper shank and with bottom to hold straight shank tool or Morse Taper shank tool, or with standard Apex quick change drill chucks.

### Threadlock Screw Thread

A NEW form of screw thread which obviates the need for lock nuts, lock washers and split pins has been developed by the Dardelet Threadlock Corp., 120 Broadway, New York. As shown by the drawing herewith, the bolt is provided with a thread having an angle simi-

Dardelet Threadlock bolt and nut

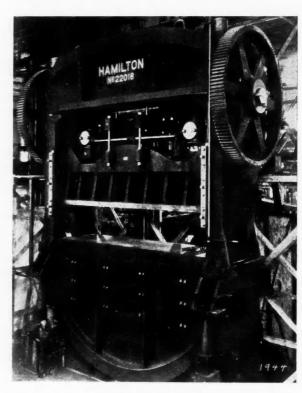
lar to that of the Acme thread, but the space between threads is considerably wider than the thread itself. The bottom of the space is not parallel with the axis of the bolt but inclined thereto, the high side being toward the end where the nut first

engages the bolt. The top of the thread of the nut is similarly inclined.

When the nut is screwed over the bolt, it advances along same with the top of the thread of the nut contacting lightly with the bottom of the space between threads on the bolt, near the small diameter end of the

### Huge Frame Presses

A NEW 2000-ton capacity press for stamping automobile frame side rails recently was installed by the Midland Steel Products Co., at its Detroit plant. A duplicate of the press is being constructed for the Cleveland division of the company. These presses are the largest of their kind ever built and were especially designed in cooperation with the Hooven-Owen-Rentschler Co. of Hamilton, Ohio. They will make possible the forming of two side rails at a time with a produc-



Huge frame press built for the Midland Steel Products Co.

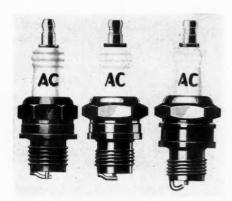
tive capacity of 720 side rails or 360 complete frames an hour.

The unusual proportions of the presses are indicated by the fact that the weight of the slide is 45 tons, the arch 70 tons and the bed 90 tons. The entire weight of the press is 400 tons, and the overall height is 33 ft. If these figures do not form a proper picture, compare the size of the press in the illustration with the man standing alongside it.

# Parts, Accessories and Production Tools

### AC Metric Spark Plug

THREE new metric spark plugs have been introduced by the AC Spark Plug Co., Flint, Mich. The plugs are of one-piece construction, with welded side wire and are leak-proof. The plug is sealed under a heat condition that never will be attained in an engine,

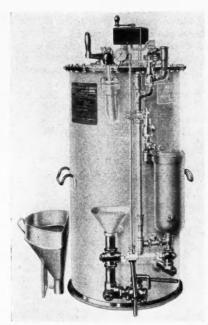


AC metric spark plugs

so that the engine can never get hot enough to break the seal and cause leakage.

The three types are the Type J, which is standard equipment on the Nash Advanced Special Sixes; Type G-10, standard on Hudson, Essex, Cadillac and LaSalle, and G-13, standard on the Plymouth.

# Prest-O-Weld Acetylene Generator



XWELD Acetylene Company, 30 East Forty-second Street, New York, has developed the Prest-O-Weld Type MP-101 medium pressure acetylene generator for stationary or portable work in connection with either medium-pressure or low - pressure welding and cutting blowpipes. The generator is adequate for any type of welding or cutting operation and can easily be carried from place to place on a truck or wagon.

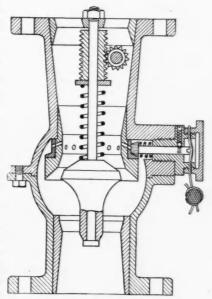
Prest-O-Weld acetylene generator

### Larsonneur Engine Governor

D. L. LARSONNEUR of Oaklawn, Ill., has invented an engine governor of the gas-inertia type, in which means are provided for changing the governed speed of the engine at will and for adjusting the openings through which the engine is supplied

with mixture when the governor valve is closed. A sectional view of the device is shown herewith.

The governor is comprised of a housing within which there is formed a seat for a poppet valve. This valve is normally held open by gravity and by the pressure of a light coiled spring surrounding a guide rod. The seat or support for this spring is movable on the guide rod of the valve and can be adjusted in the direction of the axis of the coiled spring by



Larsonneur's engine governor

means of annular gear teeth cut on it, and a gear pinion meshing therewith. If the spring support is moved downward, it takes greater suction in the inlet manifold to close the governor valve, and the engine will run at a higher speed, and vice versa.

Through the wall of the throat directly above the seat of the governor valve are drilled a number of holes, through which mixture can pass to the engine when the governor valve is closed. The throat is surrounded on the outside by a sleeve in which there are holes that are adapted to register with the holes in the throat wall. This sleeve is provided with bevel gear teeth and can be rotated around its axis by means of a bevel pinion on a spindle projecting laterally from the governor housing and carrying a milled head at its outer end.

#### U. S. Six-Inch Grinder

THE United States Electrical Tool Co., Cincinnati, Ohio, has announced a new 6-in. grinder listing at \$34.50, which has ball bearings, heavy nickel steel spindle, ¼ hp. motor of 3450 r.p.m. load speed, adjustable tool rests, and complete electrical connections. This new grinder is furnished for 110-volt, 60-cycle current as standard, but can be furnished in 220-volt, two and three-phase, and in 110 and 220-volt direct current.

# News



PAGE 530

VOLUME 60

Philadelphia, Saturday, March 30, 1929

NUMBER 13

### General Motors Announces Net Income as \$276,468,108

Report for 1928 Shows Profit of \$15.35 Per Share, Compared to \$12.99 on Old Stock in 1927, When Income Was \$235,104,826

NEW YORK, March 30-General Motors Corp. reports net earnings for 1928 of \$276,468,108 after all charges. This includes \$4,123,838 as the corporation's proportion of earnings and losses of subsidiary and affiliated companies not consolidated but accruing to the corporation in excess of dividends received, and compares with net earnings for 1927 of \$235,104,826, an increase of 17.6 per cent. It is equivalent to \$15.35 a share on stock outstanding Dec. 31, or \$6.14 a share on the new stock issued early this year. It compares with \$12.99 a share on the old stock in 1927, or the equivalent of \$5.20 a share on present stock.

During the year regular dividends at the rate of \$5 a share were paid and an extra dividend of \$2 a share was paid on July 3, together with an additional extra dividend of \$2.50 paid January 4 of this year to stockholders of record November 17, 1928. Total cash dividends paid during the year amounted to \$165,300,002 as compared with \$134,836,081 the previous year. On Dec. 10 stockholders authorized a change in stock capitalization, exchanging 21/2 shares of the new \$10 par value stock for each share of \$25 par value stock then outstanding. After dividends there was available for reinvestment in the business \$101,763,350 as compared with \$91,159,415 for the previous year.

Cash and negotiable securities at the close of the year amounted to \$215,-905,230 as compared with \$208,176,198 at the close of the previous year. The current assets were \$468,809,287 as compared with current liabilities of \$173,020,983, an excess of \$295,788,304. The corporation's sales during the year, exclusive of inter-company items, amounted to \$1,459,762,906 as compared with \$1,269,519,673 in 1927.

During 1928 General Motors produced approximately 40 cars out of every 100 made in this country.

Senate Asks Ford's Advice WASHINGTON, March 27-Henry Ford, J. P. Morgan and other prominent business men were invited by the Senate Agricultural Committee yesterday to give advice in solving the farm problem.

Permits Are Issued for Ford Expansion

LOS ANGELES, March 27-Detroit officials of the Ford Motor Co. have in their hands bids for the construction of concrete piling, wharves, and foundations for the new Ford plant to be erected in Los Angeles and Long Beach. Permits by the two cities, aggregating \$757,200, have been issued. Other permits for an oil house, a gravity tank, a powerhouse and similar facilities are yet to come. The boundary separating the two cities runs through the Ford

The Long Beach permits total \$403,-800 and those by Los Angeles \$353,400. These figures will be increased to about \$2,000,000 by further contracts. Piling whar some will cost approximately \$500,000. The new building will measure 350 by 900 ft., covering an area of 360,400 sq. ft. Except for the two-story portion of the structure devoted to offices, the building will be one-story in height. Albert Kahn, of Detroit, is the architect.

Wheel Firms to Merge

NEW YORK, March 28-Directors of Kelsey-Hayes Wheel Corp., and the Wire Wheel Corp of America, have approved consolidation into a new corporation to be known as the Kelsey-Hayes Wheel Corp. The financing is to be on the basis of exchange of shares, old Kelsey-Hayes stock, preferred and Hupmobile Owners to Get Plane Ride

DETROIT, March 27-On April 17, 150 purchasers of Hupmobile Century Eights will be brought from Chicago in a fleet of airplanes to drive their cars home the following day. The event was conceived when the Gambill Motor Co., Inc., Hupmobile distributor in Chicago, placed an order for \$2,790,600 worth of cars recently. Stout Air Services, Inc., will supply trimotored airplanes for the occasion and a dozen other aircraft will act as escort.

common, being exchanged on a share for share basis for new Kelsey-Hayes, preferred and common. Wire Wheel stock is to be exchanged on a share for share basis with preferred stock of the new company.

Aero Supply Purchases Standard and National

NEW YORK, March 27 — Aero Supply Mfg. Co., Inc., Long Island City, has purchased Standard Automatic Products, Corry, Pa., and the National Steel Products Co., Dayton, Ohio. All three of these companies are manufacturers of aircraft supplies and equipment.

In order to finance this purchase the Aero Supply Co. has proposed an increase in authorized Class B stock from 65,000 shares no par value to 500,000 shares no par value.

Lancia in Receivership

NEW YORK, March 27-Lancia Motors of America, Inc., has been put in receivership by Federal Judge Thomas D. Thatcher following a petition by the Royal Indemnity Co. with a claim of \$50,000. This claim was incurred as guarantor of a promissory note given to the Bank of Europe Trust Co. in favor of Lancia Sales Co. Liabilities are estimated at \$200,000 exclusive of capital stock. The Irving Trust Co. was appointed receiver.

#### War Dept. Announces New Cooling Fluid

Finds Agency to Replace Water in Engines at Huge Saving

WASHINGTON, March 27-The development of a new cooling agency to replace water in airplane engines at a great saving in weight and efficiency was announced here this week by the War Department. The fluid has a boiling point of 387 deg. Fahr., compared to 212 deg. for water, and 41/2 gal. will serve the purpose of 18 gal. of water, a saving of 84 lb. in weight, it was explained.

While the chemical formula has not been made public, the War Department stated that its ingredients may be purchased in the open market at comparatively low prices. The fluid was developed at the laboratories of the Army Air Corps Material Division at Wilbur Wright Field, Dayton, Ohio.

Muskegon Piston Ring Co. Plans Addition to Plant

DETROIT, March 27-The Muskegon Piston Ring Co., Muskegon, Mich., is planning to build a further addition to its plant to increase its productive capacity about 15 per cent. This increase in plant capacity is necessitated by the fact that the company has been unable to supply the demand for piston rings, although the recent addition to its factories has enabled it to increase output to 240,000 rings daily as against a 1928 output of 70,000 daily and a 1927 output of 45,000 daily.

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Firestone Planning Stations

DALLAS, March 28 - Harvey S. Firestone announced here this week that the Firestone Tire & Rubber Co. plans to sponsor the establishment of a chain of master service stations throughout the country. Such stations to be located here and at Houston will cost about \$150,000 each, it was said. Other stations may be located next at San Antonio, Fort Worth and El Paso.

#### To Increase Stock

DETROIT, March 27-Motor Products Corp. has approved a plan for increasing of common stock to 500,000 authorized shares. The plan calls for the redemption on May 18 of 30,614 preferred shares of the corporation outstanding and for the offering to stockholders of common shares for subscription at \$28 per share on the basis of one share of new for each two common shares held on March 28.

#### Willard Considers Plant

CLEVELAND, March 28-Officials of the Willard Storage Battery, of this city, announce that the company has options on property at Los Angeles and Detroit hospital.

at Oakland with the consideration of Noblitt Confirms erecting a factory on the Pacific Coast. No decision as to which site will be chosen or when construction might start has been announced, however. Such a plant would be the only Willard manufacturing unit aside from the main plant here.

Packard Adding Building

DETROIT, March 26-Concrete work is completed and structural work has begun on a new \$750,000 sheet metal stamping department being added to the plant of the Packard Motor Car The new structure, a five-story building with approximately 300,000 square feet of floor space, is located just south of the body assembly plant.

Chamberlain Speaks

DETROIT, March 26-A plea for more direct contact between factory engineering departments and the dealer field was voiced here last night by R. E. Chamberlain, general sales manager, Packard Motor Car Co., in an address entitled, "This Body Business," delivered before the local section of the Society of Automotive Engineers.

#### Nash Adds Two Models

KENOSHA, WIS., March 26-Nash Motors Co. announces the addition of two models to its Special Six, "400" Series line, a roadster and a seven-passenger sedan, priced \$1,345 and \$1,645 respectively. These models round out the company's "400" Series line.

#### Studebaker to Add Models

SOUTH BEND, March 26-Current Studebaker-Erskine models will be increased to a total of 50 through the addition of seven options on the President Eight brougham, according to A. R. Erskine, president of Studebaker Corp. of America.

#### General Electric Reports

NEW YORK, March 26-General Electric Co. reports net earnings for 1928 of \$54,153,806, equivalent after dividends on special stock to \$7.15 a share on common stock. This compares with earnings for 1927 equivalent to \$6.41 a share. Orders received during the year were \$348,848,512 as co... ared with \$309,784,623 in the previous year.

Auto-Lite Sales High

TOLEDO, March 27-The Electric Auto-Lite Co. has achieved a volume of business 92 per cent greater than that of the first quarter, 1928, C. O. Miniger, president, told stockholders at the meeting yesterday. The company reelected

#### Charles Fillmore Mellish

DETROIT, March 27-Charles Fillmore Mellish, 72, secretary and director of the Federal Motor Truck Co., died of heart disease, March 21, in a

# Merger as Pending

Stockholders to Vote on Proposed Deal With Borg-Warner

INDIANAPOLIS, March 28 - Officials of Noblitt Sparks Industries, Inc., yesterday verified the report that their stockholders would meet within two weeks to vote on a merger with the Borg-Warner Corp., Chicago. Quinton G. Noblitt, president, and Frank H. Sparks, vice-president, now in Miami, declined to make a further statement.

Noblitt Sparks Industries, Inc., founded as the Indianapolis Air Pump Co. in 1919, has three plants, at Greenwood, Columbus and Seymour, with central offices here. Two of the plants manufacture automobile equipment, including Arvin heaters, while the third manufactures toys and novelties. The company is capitalized at 60,000 shares of common stock, marketed some time ago at \$30 a share. It has no preferred stock and no funded debt. The annual business is said to be approximately \$2,000,000.

The Borg-Warner Corp., which manufactures automobile gears and equipment, is capitalized at 600,000 shares of stock, valued on the present market at \$125 to \$140 each. It acquired the Wheeler Schebler Carburetor Co., this city, about a year ago. The basis of exchange is understood to be three shares of Noblitt to one of Borg-Warner. Officials of the Noblitt company expressed the opinion that their stockholders would approve the proposed merger.

It was understood in Chicago that negotiations were under way for the entrance of a second company into the Borg-Warner combination, and that details of the absorption would be completed within a day or two.

Peerless Running Eight Off New Assembly Line

CLEVELAND, March 27-The new Peerless Eight-125 is being produced without disturbing the assembly line on the Six-61 which is being built in record-breaking quantities. Heretofore both Sixes and Eights have been assembled on the same line in the Peerless

The removal of the Cleveland branch from the factory buildings to a new location and ingenious rearrangement of the factory have given Peerless officials three large buildings to use exclusively for the new eight.

#### Midland Completes Building

DETROIT, March 26-The Midland Steel Products Co. has completed construction of a new \$250,000 building for engineering research at its Cleveland

#### Delegates Disagree on Hazards of Fire

Members of Three Groups Discuss Airport Risks at Conference

WASHINGTON, March 28-Seventyfive representatives of the airplane manufacturing and transportation industries and of the National Board of Fire Underwriters attended a conference called by the aeronautics branch of the Department of Commerce on March 22 to discuss the third draft of regulations proposed for the construction and protection of airports.

Representatives of the board of underwriters insisted that sprinklers be installed at airports while representatives of the industry expressed the opinion that this form of protection was not necessary. It was suggested also that the definitions of the meaning of floor space area be more clearly stated so that confusion will not result in their interpretation.

Among those representing the aircraft industry and taking part in the discussions were C. A. Jones, president of the Curtiss Flying Service, and F. Lawrence LePage, assistant to the president of Pitcairn Aviation, Inc., of Philadelphia.

#### Chevrolet Reports Plans for 11 Parts Warehouses

DETROIT, March 25-Completion this fall of the warehouse building program undertaken by the Chevrolet Motor Co. will assure the company of 1,180,000 sq. ft. of floor space for the actual warehousing and shipping of parts, exclusive of the necessary office space, according to J. P. Little, manager of the parts and service division. In addition to the 28 warehouses now maintained throughout the country, the company will open 11 such establishments this year. According to Mr. Little, Chevrolet owners may now obtain service at 20,960 points in the United States.

New warehouses are under construction or will be built this year at Indianapolis, Birmingham, Ala., Salt Lake City, Richmond, Great Falls, Mont., El Paso, Texas, Wichita, Kan., and Knoxville, Tenn. Site for three others will be announced soon.

#### McCord to Open Plant

DETROIT, March 26-The addition which the McCord Mfg. Co. is making to its gasket plant, at Wyandotte, will be in production in about three weeks, and will increase the output in that line by 25 per cent.

#### Schmidt Talks on East

NEW YORK, March 25-Walton Schmidt, field representative of the National Automobile Chamber of Commerce, described conditions affecting the

automotive industry in the Far East | Mills to Enter April seas Automotive Club here. Schmidt recently returned from a trip through several countries of the Orient, as well as Australia and New Zealand. R. C. Thompson, export manager, Prest-O-Lite Storage Battery Co., and Pio Cavallie, sales representative of the Multibestos Co. in Italy, also

#### February Exports Rise

WASHINGTON, March 27-Exports of automobiles, parts and accessories from the United States in February reached a total of \$59,559,574, as compared with \$34,944,902 in February, 1928, according to the Department of Commerce. Shipments of passenger cars last month numbered 35,253, as compared with 25,114 in the corresponding month last year. Trucks exported numbered 19,805 with a value of \$11,150,108, as compared with 8836, valued at \$6,360,523 in February,

#### Henry Elliott Rose

DETROIT, March 27-Henry Elliott Rose, aged 46, sales promotion manager of the Hupp Motor Car Corp., died in St. Petersburg, Fla., yester-day of heart disease. Mr. Rose had been with the Hupp company about five years. He was granted a leave of absence three months ago and went to Florida to regain his health. Burial will be in Detroit.

#### Otto E. Stoll

DETROIT, March 25-Otto E. Stoll, 43, who retired a year ago as a vicepresident, director and general manager of the General Motors Truck Co., died in New York, March 23. Mr. Stoll had been prominently connected with General Motors Truck since its organization in 1908.

#### Ford Poland Plant Rumored

DETROIT, March 25-According to advices reaching here, the Ford Motor Co. is planning to erect an automobile plant in Poland to produce cars for Soviet Russia and the Baltic States as well as Poland. The story emanated from the American Polish Chamber of Commerce in New York.

#### Reo Calls Conference

LANSING, MICH., March 26-Reo Motor Car Co. representatives from all parts of the country will attend a general discussion meeting at the factory, C. E. Eldridge, sales manager, announced today.

#### Correction

In the feature article concerning operations of the Andre Citroen Company of Paris, published last week in Automotive Industries, the spindle drill shown in one of the illustrations was a Natco and not a Foote-Burt, as was stated inadvertently in the caption.

# at Capacity Output

Steel Makers Carry Forward Unfilled Orders at Old Prices

NEW YORK, March 28-Statistics just issued by the National Association of Flat Rolled Steel Manufacturers show that, from the unfilled tonnage on their books March 1, rollers will carry into April 300,000 tons. mills are obligated at old prices for the greater volume of black and blue annealed sheets in this amount, and the advance that was supposed to have become operative on all business not specified against on March 15, is, therefore, largely nominal.

Under the stimulus of requests from customers, some remarkable output records have been established. Production per turn has been advanced and pauses for mechanical readjustment of equipment cut down. Strip mills are operating at capacity on automotive orders, but in this case, also, commitments preceding price advances constitute the major part of orders.

Small buyers of narrow width coldrolled strip find considerable fault with the new list of extras. Demand for fender stock exceeds capacity. The recent \$2 per ton advance in cold-finished steel bars has become established fully for second quarter business, but some consumers have considerably first quarter supplies at old prices to draw against. Automotive alloy steel makers are operating at capacity.

Pig Iron-An advance of 25c per ton in Lake Superior iron ore prices, the first price change in five years, furnishes one of a number of reasons for a higher price tendency in the pig iron market. Higher coke prices are also anticipated for the second quarter.

Aluminum-With the price of aluminum, which weighs less than one-third what copper does, practically on a parity with that metal, considerable demand comes from industries ordinarily using the heavier metal. Importers report excellent demand. The domestic producer is believed to be operating at a high rate. Remelters report brisk demand.

Copper-With some sales at a premium of ½c over producers' prices, market opinion is again divided as to the outlook. Wall Street news agencies, which seem to have been better informed than the metal market was of late, say that no break in prices is to be expected for several months. With the wish obviously father to the thought, some of the independent brass interests intimate that the descent from prevailing high levels is likely to be precipitate.

Tin-On dips a good deal of consuming demand comes out. The market so far has shown little disposition to join in the upward movement of other metals.

Lead-In the "outside" market premiums for nearby shipments are common. The London market, however, is more bearish. The principal American producer is striving hard to stabilize conditions.

Zinc-Strong and higher.

## Use of Lubricants Discussed by Round

Expert Urges Performance Tests, at Section Meeting of S.A.E.

NEW YORK, March 25—The impossibility of determining the suitability of lubricating oil for certain uses by mere specifications was shown by G. A. Round, of the Vacuum Oil Co., at the March meeting of the Metropolitan Section of the Society of Automotive Engineers.

The increasing tendency for the government, municipalities and other large users of lubricants to buy on records of performance and reputation was explained by referring to the publication of the American Society for Testing Materials on the subject of the Significance and Limitations of Oil Specifications. "Car manufacturers," said Mr. Round, "could do much to reduce service troubles if they would recommend, through their instruction books, those brands of lubricants that had been tried and found suitable for use in their vehicles."

That an engine with a "fuel knock" resulting from high compression will show more power with an "anti-knock" fuel, but that an engine that is not knocking will show no increase in power with an "anti-knock" fuel, was one of the points made in the paper presented at the meeting by Neil MacCoull of the Texas Co. He further mentioned that the very good foreign markets for kerosene for illuminating purposes were helping refiners to keep down gasoline costs and to give motorists better fuel.

#### Aviation Corp. Proposes to Gain Fairchild Stock

FARMINGDALE, L. I., March 27—The Fairchild Aviation Corp. has been approached by The Aviation Corp. with a view to the latter company acquiring controlling interest in the manufacturing company, according to a statement by Sherman M. Fairchild, president.

The proposal is for an exchange of stock, Fairchild stockholders being accorded the opportunity to convert part of their holdings into stock in The Aviation Corp. The exact basis of conversion has not yet been determined. The Fairchild Aviation Corp. is a \$5,000,000 concern operating as a holding company for Fairchild Airplane Mfg. Corp., Fairchild Aerial Camera Corp., Fairchild Aerial Surveys, Inc., and Fairchild Flying Corp.

#### Wright Expanding Service

PATERSON, N. J., March 25—In addition to its recent establishment of 36 service depots throughout the country, the Wright Aeronautical Corp. announces that arrangements have been made for the manufacture, sale and servicing of Wright aviation engines in

five foreign countries. More than 100 Wright service stations will be in operation before the end of the year, according to Bruce G. Leighton, director of sales and service. The company has reported orders for the first two and one-half months of this year totaling \$10,250,423 as compared with less than \$9,000,000 for the entire year 1928.

#### Major Segrave Honored at Capitol on Way Home

WASHINGTON, March 28—Major H. O. D. Segrave, holder of the world's automobile speed record, stopped off in Washington yesterday en route from Daytona Beach to England to pay his respects to President Hoover and to receive the Daytona City Cup from Vice-President Curtis.

The racing champion declared that he is now interested in speedboat racing and plans the construction of a speedboat to meet Gar Wood in the Duke of York trophy race in England on June 10. He said he might again try for an automobile speed record if someone comes along and smashes his recent record of 231 m.p.h.

Captain J. S. Irving, who designed the "Golden Arrow," met Major Segrave in Washington. He predicted that in a comparatively few years the world will see super-speeds on superhighways. "Two hundred m.p.h.," he said, "is mere child's play and 300 miles an hour may be child's play after next year."

#### Wood Sets Speedboat Mark

MIAMI BEACH, FLA., March 25—After losing his match with Major H. O. D. Segrave at the Biscayne Bay Regatta last week, when he was hindered by mechanical trouble, Gar Wood sent his "Miss America VII" over a one-mile course in Indian Creek here this afternoon at an average speed of 93.123 m.p.h., setting a new world's speedboat record, and breaking his own salt water record with "Miss America V" in 1926, by nearly 13 miles. The fastest previous mile by "Miss America VII" was made on the fresh water course at Detroit when Wood covered a single lap at 93.60 m.p.h.

#### Haynes Touring West

DETROIT, March 27—F. J. Haynes, president of Durant Motors, Inc., is making a three weeks' tour of the West to meet branch managers. His schedule calls for stops at Kansas City, Los Angeles, San Francisco, Oakland, Salt Lake City, Denver, Omaha and Chicago.

#### G.M. of Canada Growing

WINDSOR, ONT., March 26—General Motors Co. of Canada, Ltd., will build 40,000 trucks and coaches in its Walkerville plant this year, according to officials. Employment there has reached 2000 already, and will probably increase to 2500 this year. The company will take over on Jan. 1, 1930, the old Fisher body plant in Ford City, at present under lease to Chrysler Motors.

#### Ford of Canada Co. Split-Up Approved

Stock Plan Expected to Bring in \$9,000,000 More Capital

DETROIT, March 27—Directors of the Ford Motor Co. of Canada, Ltd., meeting yesterday, approved the 20 to 1 stock split-up which will place the capitalization of the company on a new basis. A price of \$30 per share was set on 130,000 shares of the Class A stock to be offered to Canadian citizens. The entire board of directors was reelected previous to this action.

Stockholders of record March 23 are to be offered 140,000 shares of the new Class A stock at \$20 per share, distribution to be on the basis of two shares of the new stock for one of the old. In addition, 100,000 shares are to be split among the employees. The new president, W. R. Campbell, told stockholders that the company showed an operating profit of \$610,000 in January and of \$744,000 in February. An estimated March output of 12,800 cars and trucks, he said, will show an operating profit of about \$1,000,000.

Henry Ford will have stock control of the company through the following arrangement: The 30,000 shares of old capital stock, now in the company's treasury, will be converted into B stock which will be placed in a voting trust, against which certificates will be issued at \$25 each. The voting trust will consist of three members of which Henry Ford will name one. Another is to be a trustee of the voting trust and the third member will be appointed by the other two members.

Henry Ford and family own 21,000 shares or 30 per cent of the old outstanding capital stock. With the voting trust certificates, Ford will control 51,000 shares of the new B stock which carries the sole voting power.

Sale of the new stock is expected to bring in something over \$9,000,000 of additional capital, which it is proposed to use for expansion. The proposed recapitalization is subject to the approval of the Secretary of State of Canada. Mr. Campbell, as the new president, succeeds Edsel B. Ford, who became chairman of the board. G. E. Dicker was elected first vice-president; P. E. Martin, second vice-president; D. B. Greigs, secretary and treasurer, and G. Kew, assistant secretary.

The company recently reported a net loss of \$3,400,651 for the year ended Dec. 31, 1928, after charges including depreciation and taxes. This compares with net profit of \$171,222, equal to \$2.44 a share on 70,000 shares of stock in 1927. These changes were said to reflect the interruption of manufacture and the heavy costs incidental to the introduction of the Model A car and Model AA truck. The company reported production in 1928 as 75,241 cars and trucks and 1689 tractors.

## Men of the Industry and What They Are Doing

#### Rockwell, Moore, Chatley and Keese Head New Firm

The operation of the Wisconsin Axle Co., Oshkosh, Wis., recently organized to take over the assets of the Wisconsin Parts Co., following the merger of the latter concern with the Timken-Detroit Axle Co., has been placed under the direction of W. F. Rockwell, vice-president and general manager; G. T. Moore, vice-president and sales manager; A. H. Chatley, secretary-treasurer, and B. W. Keese, chief engineer.

At a recent meeting of stockholders the following directors were elected: Fred Glover and D. S. Devor, of Detroit, and W. F. Rockwell, G. T. Moore and A. H. Chatley, of Oshkosh. The Wisconsin subsidiary will continue to manufacture double reduction axles for trucks and buses and the line of worm drive axle for use in four and sixwheel vehicles. In addition the company is engaged in the manufacture of transmissions and axles for farm tractors.

#### Baker Leaves Miller

H. R. Baker, for seven years advertising manager of Miller Rubber Co., has resigned to become vice-president of the Gardner Advertising Agency, St. Louis and New York. Mr. Baker will have his headquarters in Akron.

#### Goldman Leaves North East

George Goldman of Elgin, Ill., for the past 11 years in the service division of the North East Electric Co., has severed his connection with that firm. He has not announced his plans for the future.

#### Millhone in New Post

Horace D. Millhone has been named assistant advertising manager of Durant Motors, Inc. Mr. Millhone previously was with Advertisers, Inc., Dodge Brothers and George Harrison Phelps.

#### Kerr and Keller Appointed

The Brown Instrument Co., Philadelphia, announces the appointment of Charles H. Kerr as vice-president and general manager and of George W. Keller as vice-president and general sales manager.

#### Globe Forge Elects Bishop

E. R. Bishop, general manager of Globe Forge & Foundries, Inc., Syracuse, was elected vice-president and treasurer and a director of the company at its recent annual meeting.

#### Cummings in New Post

The National Acme Co., Cleveland, maker of machine tools, has appointed H. L. Cummings New England repre-

sentative. Mr. Cummings, who for 14 years was in the machinery sales department at the company's Windsor, Vt., branch, will operate from the New York office.

#### Four Durant Heads Move

Four finance and sales executives of Durant Motors, Inc., have moved from Elizabeth, N. J., to Detroit, the new Detroit office of the parent company. They are Wallace Zwiener, comptroller, H. J. Shorter, assistant general sales manager, D. J. Lewis, in charge of Dealers' Finance, and H. P. Gilpin, export sales manager.

#### McDarby Explains Output

N. E. McDarby, general sales manager of the Auburn Automobile Co., stopping at San Francisco recently during a tour of inspection throughout the West, said "We are building more cars in March than the factory produced during the entire year of 1924. Our Connersville, Ind., plant and the Lycoming motor plant are running 24 hours a day, seven days a week."

#### Mosher Named Sales Manager

The appointment of Allen Mosher as sales manager of the Fargo Motor Corp. of Canada, Limited, was recently announced by J. D. Mansfield, president and general manager of the Chrysler Corp. of Canada, Limited. Mr. Mosher has had 15 years of experience in the manufacture and merchandising of commercial cars.

#### **DuBois Joins Continental**

Ralph N. DuBois has joined the aeronautical division of the Continental Motors Corp. as research engineer. For five years Mr. DuBois was engaged in aviation engine investigation at the Bureau of Standards, after which he became research engineer for the AC Spark Plug Co.

#### Tracy Completes Tour

W. R. Tracy, vice-president in charge of sales of the Oakland Motor Car Co., has returned from a 16,000-mile trip visiting 150 dealers throughout the country. Completing his two months on the road, Mr. Tracy said, "In the entire country I found no complaints about business and discovered nothing but optimism."

#### Hodgkins Names Lyons

James R. Lyons, known in the industry as "Jimmy" Lyons, has been named special representative of Durant Motors, Inc., by R. T. Hodgkins, general sales manager. Mr. Lyons returns to the group of executives with whom he was associated at Dodge Brothers before and when the first car bearing the name was built.

#### Aeronautical Chamber Elects New Governors

E. N. Gott, president of the Keystone-Loening Aircraft Co.; W. H. Beech, president, Air Travel Co., and C. J. Brukner, president, Advance Aircraft Co., were elected governors of the Aeronautical Chamber of Commerce at a recent meeting in New York.

They fill vacancies due to the resignations of L. D. Gardner, president, Aeronautical Industries, Inc.; Paul Henderson, vice-president, Transcontinental Air Transport, Inc., and C. L. Lawrance, president, Wright Aeronautical Corp., who have become members of a newly established advisory body known as "The Council." This body, consisting of all ex-presidents of the Chamber, includes I. M. Uppercu, president, Aeromarine Klemm Corp., and G. C. Lowning, aeronautical engineer.

#### Dodge Appoints Cregor

J. D. Mansfield, president of the Chrysler Corp. of Canada, Ltd., has announced the appointment of L. M. Cregor, formerly a district representative, as sales manager of Dodge Brothers, Ltd., to succeed E. P. Clarkson, who resigned recently. It was announced at the same time that the Dodge plant at Toronto would not be moved to Windsor, as had been rumored, although Dodge administration offices for Canada henceforth would be located in that city.

#### **Edsel Ford Orders Yacht**

Edsel Ford has placed an order for an all-steel yacht, 130 ft. long, 23 ft. beam and 7 ft. 6 in. draft. This boat will be powered by two 300-hp. Diesel engines designed to maintain a speed of 14 knots and have a cruising radius of 3500 miles.

#### Caminez Brothers Return

Harold Caminez and his brother, David B. Caminez, aviation engineers, returned last week from Europe after completing a three months' survey of the aviation engine industry throughout England and the Continent. They announced their present business address as 15 Park Row, New York City.

#### Pitcairn to Meet Cierva

Harold F. Pitcairn, president of Pitcairn Aviation, Inc., has sailed for England to confer with Senor Juan de la Cierva, inventor of the Autogiro, on perfection and commercial production of the plane in this country.

#### Woodbury Investing \$750,000

Cliff Woodbury, automobile race driver, has announced plans to construct a hotel and two garage buildings in Chicago at a total cost of \$750,000.

#### Hercules Purchases Building for Plant

New \$500,000 Unit to Add 100 Bodies Daily to Output

EVANSVILLE, IND., March 28—Hercules Products, Inc., commercial car body building division of Servel, Inc., has purchased the three-story building of the Bocksteage Furniture Co., of this city, to expand its manufacturing facilities. The building, together with new equipment to be installed, represents an investment of \$500,000, according to George K. Specht, vice-president in charge of distribution.

The new plant, covering a city block, and affording 113,000 sq. ft. of floor space, will be opened about May 15 on a schedule of 100 bodies daily. It will employ several hundred persons, and, together with the older plant, will bring the production of the company to between 400 and 500 bodies a day.

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"The increase in manufacturing facilities comes about as the result of more unfilled orders on the Hercules books than ever before in its history," Mr. Specht said.

The new assembly plant of Hercules Products, Ltd., at Walkerville, Ont., will go into production within a few days, beginning with a schedule of 50 bodies daily, which will be increased to 100 bodies daily within 60 days, it was announced.

#### Earnings of \$30,991,795 Set Record for Chrysler

NEW YORK, March 23-Chrysler Motors reports net profit for 1928 after all charges as \$30,991,795. This compares with \$19,484,880 for 1927. Net addition to surplus was \$19,244,488, bringing the surplus as of Dec. 31 to \$48,225,210. Net profit after payment of preferred dividends and retirement of preference stock is equivalent to \$7.03 a share on common stock and compares with \$6.55 a share in 1927, thus establishing a new record of earnings. The funded debt was increased during the year, by the assumption of Dodge Brothers securities, by \$59,010,-000. Chrysler shipments during the year 1928, including Dodge operations, amounted to 444,762 cars, an increase of 30 per cent over 1927. At the directors' meeting yesterday the regular quarterly dividend of 75 cents a share on common stock was declared, payable June 29 to stockholders of record May 31.

Rolls-Royce Sales Up
SPRINGFIELD, MASS., March 25—
Rolls-Royce of America, Inc., reports
production at a higher rate than at any
previous time. Sales thus far in 1929
have run from 40 to 50 per cent ahead
of the corresponding period of 1928,
officials say.

#### Financial Notes

Packard Motor Car Co. reports net earnings for the six months ended Feb. 28, after all charges, as \$15,381,910, equivalent to \$5.12 a share on outstanding \$10 par value stock and compared with \$10,140,535, or \$3.37 a share, for the corresponding half of the preceding fiscal year. Net earnings for the first six months of this fiscal year establish new records for the period and represent an increase of 51.6 per cent over earnings for the same period last year. Second quarter profits were \$7,087,303 as compared with \$4,607,267 for the corresponding quarter last year.

White Motor Co. reports net earnings for 1928, before charges and dividends, as \$2,-320,813, with the ratio of current assets to current liabilities as 8.5 to 1, as of Dec. 31, 1928. In 1927 the company reported a net loss of \$895,341. Net profit for 1928, after all charges including taxes, was \$445,996.

Keystone Aircraft Corp. and Loening Aeronautical Engineering Corp. report combined net income for 1928 after all charges as \$655,160. This is equivalent to \$2.28 a share on stock now outstanding. The directors have approved an increase of capital stock from 300,000 to 500,000 shares.

J. I. Case Threshing Machine Co. reports net income equivalent to \$26.93 per share, or \$4,236,690 after all charges, for 1928. Net earnings for the previous year were \$4,112,869, or \$25.98 per share. This is the fourth consecutive year that the company has shown an increase in its earnings.

Hayes Body Corp. has declared quarterly stock dividends of 2 per cent payable April 1 to holders of record March 25, July 1 to holders of record June 25, Oct. 1 to holders of record Sept. 25, and Jan. 2 to holders of record December 24, respectively.

Hupp Motor Car Co. has declared its regular quarterly dividend of 50 cents payable May 1 to stock of record April 15. This is in addition to the usual 2½ per cent stock dividend declared in January.

Graham-Paige Motors Corp. has declared its regular quarterly dividend of \$1.75 on first preferred stock, payable April 1 to stock of record March 15.

Spicer Mfg. Co. has declared an initial quarterly dividend of 75 cents on \$3 preferred stock payable April 15 to holders of record March 20.

**Texas Corp.** reports net earnings for 1928 of \$45,073,879 after all charges. This is equivalent to \$5.56 a share and compares with \$20,029,405, or \$2.88 a share, last year.

Kelsey-Hayes Wheel Corp. has declared a regular quarterly dividend of \$1.75 on preferred stock payable May 1 to holders of record April 19.

Thermoid Co. is financing its recent acquisition of the Southern Asbestos Co. through an issue of \$1,000,000 in 7 per cent \$100 par cumulative convertible preferred stock, an additional issue of \$500,000 in five-year, six per cent sinking fund gold

notes with stock purchase warrants and 85,000 shares of no par common stock. The outstanding capitalization of the company upon completion of this financing will consist of \$3,000,000 in five-year six per cent sinking fund gold notes, \$2,000,000 in seven per cent cumulative preferred stock and 235,000 shares of no par common stock.

Hart-Parr Co. will pay a final dividend \$1.62½ a share April 1 on its \$6.50 preferred stock outstanding. The issue has been called for redemption on May 1 at \$105 and accrued dividends in accordance with terms of the recent merger of the company with Nichols and Shepard and Oliver Chilled Plow Co. It is convertible until April 22 into common stock on the basis of 20 shares of common for nine of preferred. Each share of Hart-Parr common is entitled to one share of \$3 participating preferred and 1½ shares of common stock of the Oliver Farm Equipment Co., the new concern.

Westinghouse Electric & Mfg. Co. reports net income for 1928 as \$20,814,940, equivalent to \$8.78 per share (preferred and common), which compares with \$6.59 for the period covered by the last annual report. Both classes of stock now receive annual dividends of \$4 per share of \$50 par value. The company's fiscal year now ends Dec. 31 instead of March 31.

B. F. Goodrich Co. will submit to stockholders on April 17 a proposal to increase common stock from 1,000,000 to 1,500,000 shares. Subject to such approval, it is planned to offer for subscription 207,728 shares which will be offered to stockholders of record April 23 at \$81 a share on the basis of one new share for every four shares held. These rights will expire April 24.

Sterling Motor Truck Co. recently issued 60,000 shares of convertible preferred stock for the purpose of retiring an issue of 8 per cent preferred stock and to increase working capital. The new stock, which is listed on the Chicago Stock Exchange, is \$2 dividend, cumulative, convertible at the option of the owner into no-par common stock of the company.

Timken-Detroit Axle Co. reports net profit for 1928 after all charges of \$1,738,-337. This is equivalent after preferred dividends to \$1.77 a share on common stock outstanding at the end of the year and compares with profits of \$1.540,530, or \$1.53 a share, on common stock outstanding in 1927.

Ward LaFrance Truck Corp. recently issued 15,000 shares of no par voting stock to extend the activities of the company and for general corporate purposes. According to the balance sheet, the ratio of current assets to current liabilities is 8.5 to 1 and working capital is \$456,667.

Ross Gear & Tool Co. reports earnings in the first two months of 1929 exceed the earnings for the entire first quarter of last year. No earnings were published for the first quarter of 1928, but in the first months of the year the company reported net income of \$373,962, or \$2.48 a share, on the 150,000 shares of common stock outstanding.

# Satisfactory Sales Outlook Prevails

(Continued from page 505)

promptly. Ford sales were good, although not up to expectations.

Credit conditions are good. Repossessions are normal, and business conditions, generally speaking, are good.

#### Philadelphia

Dealers enter the second quarter of 1929 with the prospect that automobile sales will exceed those in the first three months of the year by from 20 to 30 per cent. The recent advent of warmer weather has stimulated business to a great extent, and most retail men look with favor upon increased stocks of new cars, resulting from high production at the factories. Immediate delivery of nearly all makes is possible.

Ford is outselling his nearest competitor, and it is estimated that Ford cars at this time constitute 31 per cent of all automobile sales in this city. Despite the high output of the Ford Motor Co., sales are slightly in excess of deliveries here. While definite figures are not yet available, it is estimated that total sales of all cars in March exceeded those of the corresponding month last year by some 500 units.

#### Chicago

New car sales in the Chicago territory continued throughout March the sharp upward climb started late in February. It is estimated that sales this month were at least 20 per cent greater than February and about 10 per cent ahead of March last year

Used car sales also increased and stocks in dealers' hands are at one of the lowest points ever recorded at this season of the year. New car stocks are no greater than the demand justifies and Ford deliveries in some models are six weeks behind.

#### Minneapolis

From a wholesale viewpoint, the automobile outlook in twin cities territory is good. Retail deliveries depend much upon drying up of roads. Stocks of cars are good except in some models. March sales in Minneapolis were 1079 cars, of which 357 were Fords, 191 Chevrolets and 72 Pontiacs.

#### Cincinnati

Confidence that the second quarter will reveal motor car sales close to, if not in excess of, the peak record, is expressed by all dealers. An increase of 80 per cent in new car sales for the first 15 working days in March, over the same period last year and an increase of 29.7 per cent in used car sales, is cited in support of their claim. Sales for the period last year were 760 new and 2597 used cars as against 1369 new and 3368 used vehicles this month. The unusual demand has put both new and used car inventories in good shape, in practically all cases. Ford sales this month will constitute about 35 per cent of the total, due to increased production at the local assembly plant. The plant started on a schedule of 140 cars a day March 1. Despite increased production, Ford dealers are from three weeks to three months be-

hind in deliveries. Parts and accessory dealers report demand in keeping with the upturn in car sales, Good weather is proving a big factor.

#### Boston

Boston distributors expect the second quarter to provide an increase in sales of a minimum of 10 per cent. Dealer stocks are averaging 25 per cent lower than a year ago, but used cars are from 10 to 20 per cent higher. Ford dealers report that their stocks of new cars are practically nothing, and their used cars are not piling up due to the spring demand for these latter models until new ones are available. It is a healthy condition for all.

#### Milwaukee

Arrival of spring about a week ahead of the calendar served to greatly stimulate passenger car sales, which during February and the first half of March showed signs of lagging, due largely to recordbreaking snows and intense cold. Rural sales were particularly affected, city sales more than holding their own with a year ago. Warm weather has dissolved mountain high drifts, but other than hard roads in the interior are in very bad shape, due to lack of frost penetration. The sharp revival in demand since the arrival of good weather is considered an excellent sign of an excellent demand throughout April.

May always is the best month of the entire year for passenger car sales in Wisconsin. New car stocks backed up somewhat, but are rapidly being brought down to a comfortable balance. Used cars likewise are moving better. Ford dealers report business active with deliveries not yet immediately possible on most types. New car registrations in Milwaukee county in February officially announced as 1282 against 1174 a year ago; for the state of Wisconsin in cluding Milwaukee, 3831 against 3989 a year ago.

#### St. Louis

Sales of both new and used cars improved during the latter part of the month, and a number of concerns are employing additional salesmen in anticipation of a brisk second quarter business. Stocks of new and used cars are normal. Accessory and parts sales also increased materially during March. Ford sales in February totaled 1050 cars against 387 for January.

#### Atlanta

Second quarter outlook very promising. Sales expected to be in excess of same period last year and also better than normal. First quarter sales were heavy despite adverse weather, exceeding last year. As a whole, stocks are about normal in new cars, but larger than normal in used cars. Ford sales and deliveries have been very good and dealers find a quick market for nearly all cars they can obtain. They consider second quarter outlook even more promising. Truck sales the first quarter were about normal, but second quarter outlook promises better than normal business.

#### Denver

Colorado dealers have experienced the worst March in ten years. The one possible exception is Ford dealers, who are just beginning to catch up on deliveries, and even they report now enough cars on hand in all models and colors to supply the demand until the middle of April. The reason is three-fold. A disastrous year for farmers in 1928 stopped the source of the greatest income of this region. This winter has been the most severe in the history of the local trade, and in Denver, when the weather is bad, business stops. Finally, March is always slow, as in this state tax assesments against cars are made on April 1, and buyers usually wait till after that date to avoid tax payments for 1929.

Used car stocks are mounting, although dealers in general insist that they have been extremely cautious in valuing tradeins, and that the opening of good weather will bring an immediate and satisfactorily profitable reduction in these stocks,

#### Kansas City

Dealers in Kansas City and territory are expecting 15 to 20 per cent increase in sales over last year. Economic conditions are showing steady improvement. New and used car stocks are normal to 20 per cent below. Ford sales are back in first place. While Ford dealers report many unfilled orders, they appear to have large stocks. The Ford assembly plant here has curtailed production. Higher priced cars are moving strong.

#### Oakland

Sales of all makes for March increased noticeably over February and one year ago. Stocks of new and used cars are about the same. Dealers expect 25 per cent increase in sales in the second quarter over the first quarter. New Ford stocks on hand are practically nil. Immediate delivery is being given on the four-door cars, each dealer has two or three cars on hand; none of the other models are on hand, and delivery is given in from one to three weeks. Ford dealers say they can sell all they can obtain. The demand and sales are unprecedented.

#### Los Angeles

March sales show a small increase over March last year. Dealers expect reasonably good business during the second quarter, but no substantial increase is anticipated. Dealers' stocks and new cars are slightly higher. Used cars continue to move well with moderate stock. Ford sales are slightly lower with immediate deliveries made by most dealers.

#### Lamont Expresses Optimism

WASHINGTON, March 28—Observing that the automobile industry for the first two months of the year disclosed a 100 per cent gain over last year, Secretary of Commerce Lamont this week declared that building was the only industry to show a decline and he was inclined to be optimistic about that.

## Inventories Higher in Pneumatic Tires

Rubber Association's Report Shows Increased Output in January

NEW YORK, March 25—Inventories of pneumatic tires and tubes as of Jan. 31, 1929, show an increase over January a year ago but inventories of tubes show a slight decrease over December, 1928, according to statistics compiled by the Rubber Association of America, Inc.

Production in both types is being speeded up over December figures as well as over January figures of last year, and shipments also show an increase. Shipments of tubes have shown a sufficient increase to reduce the inventory from December in spite of increased production. Both shipment and production of all types of tires show an increase over December of last year, but shipment and production of high pressure tires are lower than a year ago. Comparative figures follow:

PN	EUMA	TIC CASIN	GS-ALL	TYPES
		Inven- tory	Produc- tion	Ship- ments
Jan.	1929	10,284,158	5,041,530	4,969,647
Dec.	1928	10,217,708	4,203,624	3,443,210
Jan.	1928	7,461,923	4,018,267	4,045,842

	INNE	R TUBES-	-ALL TYP	ES
Jan.	1929	11,539,495	4,887,932	5,431,255
Dec.	1928	12,087,464	3,887,971	3,643,810
Jan.	1928	9,736,306	4,081,018	4,554,279

## BALLOON CASINGS Jan. 1929.. 6,583,958 3,470,596 3,499,121 Dec. 1928.. 6,594,978 2,761,109 2,371,732 Jan. 1928.. 3,656,537 2,377,299 2,489,391

## BALLOON INNER TUBES Jan. 1929.. 6,805,018 3,347,660 3,630,579 Dec. 1928.. 7,049,748 2,453,744 2,312,203 Jan. 1928.. 4,408,235 2,411,124 2,539,535

O CLIE	1020		1,100,200	2,111,1	Lax	2,000,000
HI	GH	PR	ESSURE	CORD	CAS	INGS
Jan.	1929		3,651,041	1,563,5	554	1,461,104
Dec.	1928		3,580,576	1,434,	529	1,061,132
Ton.	1928		3 605 064	1 684 7	750	1 496 047

O ccas.	1000		0,000,001	2,001,100	1,100,011
н	GH	PF	RESSURE	INNER	TUBES
Jan.	1929		4,734,477	1,540,272	1,800,676
Dec.	1928	3	5,037,716	1,434,227	1,331,607
Jan.	1928	3	5.328.071	1.669.894	2.014.744

**Budd Predicts Record** 

PHILADELPHIA, March 26—The Edward G. Budd Mfg. Co. of this city, maker of automobile bodies and parts, estimates that its shipments this year will reach more than 20,000 carloads compared with 9326 and 8866 carloads in 1928 and 1927 respectively. February shipments were 1387 carloads, compared with 1075 for the same month last year.

Metalcraft Adding Plant

WINDSOR, ONT., March 25—A new branch industry, the Canadian Metal-craft Corp., Ltd., is being established here for the manufacture of Kelch car heaters, panels and vanity cases for automobiles. The company has acquired premises with 10,000 sq. ft. of

Swedish Exhibition to Favor U.S. Cars

WASHINGTON, March 28—Automobiles of foreign makes are to be given prominence at the Twelfth Swedish Fair which will take place in Goteborg, Sweden, from May 25 to June 2, the Department of Commerce announced this week. The fair will be divided into two equal parts, the Department says, one part consisting of the exhibition of Swedish products and the other consisting of foreign products.

floor space and will commence operations about June 1. R. W. Hook, president of the parent company, the Grand Rapids Metalcraft Corp., is also president of the Canadian company. S. E. Ryder is managing director. Other officers are H. E. Curtis, vice-president; H. R. Warner, secretary; Lee H. D. Baker, treasurer; J. W. Kelch and Charles King, directors.

New Britain-Gridley
Merger is Completed

NEW BRITAIN, CONN., March 26—The New Britain-Gridley Machine Co. has been formed as a result of the recent merger of the New Britain Machine Co., of this city, and the Gridley Machine Co., of Hartford, Conn., and will make use of the offices and manufacturing facilities formerly used by the New Britain Machine Co. The new concern is taking over the entire business of the Gridley company and the machine tool business of the New Britain company.

H. H. Pease, formerly president of the New Britain Machine Co., is president. Among the vice-presidents are R. S. Howe and E. L. Steinle, formerly of the New Britain company; G. D. Gridley, formerly president of the Gridley company and E. H. Wheeler, also formerly of that company. R. S. Brown, formerly secretary of the New Britain company, assumes the same office in the new concern, while R. S. Howe is treasurer. The directors include: J. H. Goss, vice-president and general manager of the Scovill Co.; R. T. Frisbie, formerly vice-president of the New Britain company; F. G. Vibberts, president of the New Britain Trust Co., and P. B. Stanley, formerly vice-president of the Stanley Works.

Parts Firm Organizing

SPRINGFIELD, OHIO, March 25—Papers have been filed with the secretary of state for chartering the Jacobs Auto Parts, Inc., with a capital of \$50,000 to manufacture and to deal in automotive parts, accessories and shop tools. The incorporators are J. J. Jacobs, H. Israel and F. M. McKee.

#### Equipment Makers Establish Record

M. & E. A. Index is 243 for February; Highest Quarter Predicted

NEW YORK, March 26-Manufacturers of original equipment for automobile manufacture have shown the greatest activity ever recorded in the history of the industry, according to the monthly bulletin of the Motor and Equipment Association. The index for original equipment manufacturers, based on January, 1925, as 100, was 243 for February, as compared with 212 in January; 187 in February, 1928, and 158 in February, 1927. Indications point to an equally active March with a possible new record for this month. The association anticipates a record first quarter and considers a record first half for this year probable.

The grand index for all divisions of the association also established a new record during February. This index is 212 as compared with 188 in January and with 176 in February a year ago. The service parts index established a record as the best February in its history although it has been exceeded by other months. This index is 136 as compared with 141 in January, 128 in February, 1928, and 100 in February,

Accessories, due to the increasing equipment of cars by manufacturers, continue to show low figures, with an index for February of this year of 69 as compared with 77 in January, 91 in February a year ago and 93 in February two years ago. The service equipment index is higher than any month of last year and is exceeded in the history of the industry only by the months of March and April in 1926 and 1927. The index for February of this year is 192 as compared with 173 in January, 158 in February a year ago and 155 in February two years ago.

Jaxon Adding Docks
JACKSON, MICH., March 25—Two
new unloading docks are under construction at the plant of the Jaxon
Steel Products Co., of this city, a division of the General Motors Corp., engaged in the manufacture of automobile rims, wheels and stampings, according to C. M. Day, president.

Moore Forging Expands
SPRINGFIELD, MASS., March 26—
Moore Drop Forging Co., manufacturers of drop forgings for automobile parts, is erecting a new transformer house as part of its expansion activities.

Annual Convention Planned NEW YORK, March 25—The 48th annual convention of the American Electric Railway Association will be held in the new Municipal Auditorium, Atlantic City, Sept. 28 to Oct. 4.

## Cadillac Expansion Will Cost \$5,000,000

DETROIT, March 25—The Cadillac Motor Car Co. has launched a \$5,000,000 expansion program which, when completed will give the company an annual production capacity of 60,000 cars, an increase of 50 per cent over present plant facilities. With this expenditure, the company's investment in land, plants and equipment will have been increased by \$26,000,000 since Lawrence P. Fisher became president, April 17, 1925.

The program includes six separate projects: a new four-floor automatic screw machine building to cost, equipped, \$750,000; a \$340,000 addition to the iron foundry; a new fourth floor to the chrome, copper and nickel-plating division, estimated at \$275,000; a four-story engineering building comprising 114,000 sq. ft.; considerable additions to the LaSalle assembling unit, and an investment of more than \$500,000 in property adjacent to the main Cadillac structures for expansion yet unannounced.

#### H. M. Stephens Explains Plan of Used Car Week

DETROIT, March 30—The Cadillac-LaSalle National Used Car Week, which began yesterday and will continue to April 6, is being held for the purpose of giving the public an opportunity to take advantage of used car offerings, H. M. Stephens, general sales manager of Cadillac Motor Car Co., explained today. Dealers throughout the country are participating in the event. "It is our belief," said Mr. Stephens,

"It is our belief," said Mr. Stephens, "that this National Used Car Week is a decidedly progressive step. The better class of dealers, in the past few years, have come to regard the used car in a new light. Instead of relegating it to their storage department of a vacant lot, they now give it the same

## Speed Limit Growth is Shown by Survey

WASHINGTON, March 28— The predominating speed limitation in effect among the states of the United States last year was 35 m.p.h. as compared with 25 m.p.h. ten years ago, according to a study of speed limits of various states just completed by A. G. Bruce, senior highway engineer, Bureau of Public Roads.

thought and attention as their new cars. A special feature of the week is the fact that the cars may be purchased on the General Motors Deferred Payment Plan."

#### S. Lee George

BALTIMORE, March 25-S. Lee George, president of the G-H Mfg. Co. of this city, died suddenly on the night of March 21. Mr. George, who was 46 years old, was one of the first parts jobbers, entering that business in 1914. In 1923 he began the manufacture of replacement parts. Today the company's products include valve springs, clutch plates, brake springs, piston pin retaining springs, valve stem keys, king bolt lock pins and washers, brake adjusting screws, tension rings. About three months ago the company announced balanced valve springs for all makes of cars.

#### Delta Electric Co. Address

The address of the Detroit Office of the Delta Electric Company is 2-250 General Motors Building. Owing to a typographical error this address was given incorrectly in a recent advertisement printed in *Automotive Industries*.

#### Geometric Stamping Plant is Under Way

CLEVELAND, March 26—Construction of the new \$500,000 plant to be used by the Geometric Stamping Co., of this city, maker of metal automotive stampings, is under way and is to be completed by the middle of the summer. The Austin Co., architects and builders, have the contract. Dave R. Jones, president of the company, has explained that the present plant is to be abandoned because of its inability to handle increased business. Sales have practically doubled each year since 1924, according to Mr. Jones, and the volume for 1928 exceeded \$2,500,000.

The main unit of the new plant is to be 250 by 400 ft., one story in height. The front of the plant, however, will be of two stories, the first housing the general offices and the second the engineering department. At the rear, and adjoining the main unit, will be a structure 60 by 100 ft., housing the plating and annealing departments and the boiler house. Incoming and outgoing tracks, inside the building, will be served by traveling bridge cranes for unloading. By such means two men will be able to unload a car of steel in 15 minutes, it is explained.

The company will lease the plant and its seven-acre site from a syndicate headed by Dave R. Jones and George Jones.

#### Mullins Reports Increase

SALEM, OHIO, March 26—The Mullins Mfg. Co., maker of automobile bodies and radiators, reports that its business this month is consistent with the gain in February, which was 75 per cent greater than that of February, 1928. The company has completed a \$400,000 construction program, including the installation of machinery, which will facilitate production and cut operation cost.

### Calendar of Coming Events

#### SHOWS

Nantes, CommercialApr. 4-15
Lille, CommercialApr. 6-21
All-American Aircraft Show, Detroit
Board of Commerce, Detroit. Apr. 6-14
Milan, TrucksApr. 12-27
Jugo-Slavia, AutomobilesApr. 20-28
Budapest Auto SalonMay
Melbourne Automobile ShowMay 2-11
International Aircraft Exhibition, Olym-
pia, LondonJuly 16-27
International Aircraft Exhibit, Col-
iseum. ChicagoSept. 7-15
Paris, Automobiles
London, AutomobilesOct. 17-26
Prague, AutomobilesOct. 23-30
Paris MotorcyclesOct. 23-Nov. 3
M.&E.A. Show, ChicagoNov. 4-9
N.S.P.A. Show and Convention, De
troit
Berlin Auto SalonNov. 14
London, Trucks
London, Motorcycles Nov. 30-Dec. 7
Brussels Auto SalonDec. 7

#### CONVENTIONS

CONVENTIONS
Marketing Executives Conference, Hotel
Gibson, CincinnatiApril 3-5
Annual Meeting National Foreign Trade
Council, BaltimoreApril 17-19
Mississippi Valley Mfg. & Wholesalers,
St. Louis
National Battery Manufacturers Asso-
ciation, CincinnatiApril 24-26
American Welding Society, Annual
Meeting, New York CityApril 24-26
American Society of Mechanical Engi-
neers, Detroit
American Management Association,
New YorkMay 6-11
National Highway Traffic Association,
Hotel Stevens, ChicagoMay 13-15
National Hardware Association (Metal
Branch) Annual Meeting, Detroit,
May 16-17
A.S.M.E. Aeronautic Meeting, St. Louis,
May 27-30
American Society Testing Materials,
Annual Meeting, Atlantic City,
June 24-28
A.S.M.E.—Iron and Steel Division—Na-
tional Meeting, ClevelandSept. 11-13
Eastern States Exposition, Springfield.
Lander in Courter Language on in Divingueld,

## National Machine Tool Builders' Association, Cleveland. . . . . Sept. 30-Oct. 4 World Engineering Congress, Tokio, Japan . . . . Oct. 29-Nov. 30

#### BACES

HACES
Akron
Gardner Trophy (Aircraft), St. Louis,
May 28-30
IndianapolisMay 30
DetroitJune 9
Altoona, PaJune 15
Rudge Whitworth Cup, Le Mans,
June 15-16
Salem, N. HJune 29
French Grand PrixJune 30
AkronAug. 18
National Air Races and Show, Cleveland,
Aug. 24-Sept. 2
SyracuseAug. 31
Altoona, PaSept. 2
ClevelandSept. 15
Salem N H Oct 12

#### S. A. E.

A.S.M.E.—Iron and Steel Division—National Meeting, Cleveland...Sept. 11-13
Eastern States Exposition, Springfield,
Mass. .....Sept. 15-21

Aeronautic Meeting, Detroit....April 9-10
Summer Meeting, Saranac Lake...June 25-28
Aeronautic Meeting, Cleveland...Aug. 26-28
Production Meeting, Cleveland...Oct. 2-4